

**TRaC Wireless Test Report** : 9F2925WUS2

**Applicant** : Bluegiga

**Apparatus** : WT41 Bluetooth Module

**Specification(s)** : CFR47 Part 15.247 July 2008

**FCCID** : QOQWT41

**IC ID** : 5123A-BGTWT41

**Purpose of Test** : Certification

**Authorised by** :



: Radio Product Manager

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**Section 1:****Introduction****1.1 General**

This report contains an assessment of an apparatus against Electromagnetic Compatibility Standards based upon tests carried out on samples submitted to the Laboratory.

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## **1.2 Tests Requested By**

This testing in this report was requested by :

Bluegiga  
Sinikalliontie 5A  
Espoo  
FIN-02630  
Finland

## **1.3 Manufacturer**

as above

## **1.4 Apparatus Assessed**

The following apparatus was assessed between

WT41 Bluetooth Module

The above equipment was a FHSS transmitter operating in the 2400 MHz to 2483.5 MHz band and is a Bluetooth module, designed for use internal to a laptop and used to enable Bluetooth wireless communication within personal computers and laptops. This report covers 2 variants, the WT41-N which was tested with an external Pulse W1010 antenna and the WT41-A tested with a Murata ANG12G44SAA145 PCB Chip antenna. Data sheets of these antennas are reproduced in Appendix D of this report.

## 1.5 Test Result Summary

Full details of test results are contained within Appendix A. The following table summarises the results of the assessment.

The statements relating to compliance with the standards below apply ONLY as qualified in the notes and deviations stated in sections 1.6 to 1.7 of this test report.

Full details of test results are contained within Appendix A. The following table summarises the results of the assessment.

| Test Type                                              | Regulation                                                   | Measurement standard | Result |
|--------------------------------------------------------|--------------------------------------------------------------|----------------------|--------|
| Radiated spurious emissions<br>(Restricted bands)      | Title 47 of the CFR:<br>Part 15 Subpart (c) 15.247           | ANSI C63.10          | PASS   |
| Conducted spurious emissions<br>(Non-restricted bands) | Title 47 of the CFR:<br>Part 15 Subpart (c) 15.247           | ANSI C63.10          | PASS   |
| AC Power conducted emissions                           | Title 47 of the CFR:<br>Part 15 Subpart (c) 15.207           | ANSI C63.10          | PASS   |
| 20dB Bandwidth and Channel Spacing                     | Title 47 of the CFR :<br>Part 15 Subpart (c) 15.247(a)(1)(i) | ANSI C63.10          | PASS   |
| Conducted Carrier Power                                | Title 47 of the CFR :<br>Part 15 Subpart (c) 15.247(b)(2)    | ANSI C63.10          | PASS   |
| Hopping Frequencies                                    | Title 47 of the CFR :<br>Part 15 Subpart (c) 15.247(a)(1)    | ANSI C63.10          | PASS   |
| Channel Occupancy                                      | Title 47 of the CFR :<br>Part 15 Subpart (c) 15.247(a)(1)(i) | ANSI C63.10          | PASS   |
| Unintentional Radiated Spurious Emissions              | Title 47 of the CFR:<br>Part 15 Subpart (b) 15.109           | ANSI C63.10          | PASS   |

Abbreviations used in the above table:

Mod : Modification  
CFR : Code of Federal Regulations  
REFE : Radiated Electric Field Emissions

ANSI : American National Standards Institution  
PLCE : Power Line Conducted Emissions

## **1.6 Notes Relating To The Assessment**

With regard to this assessment, the following points should be noted:

The results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

The apparatus was set up and exercised using the configurations, modes of operation and arrangements defined in this report only.

Particular operating modes, apparatus monitoring methods and performance criteria required by the standards tested to have been performed except where identified in Section 1.7 of this test report (Deviations from Test Standards).

For emissions testing, throughout this test report, "Pass" indicates that the results for the sample as tested were below the specified limit (refer also to Section 2, Measurement Uncertainty).

Where relevant, the apparatus was only assessed using the monitoring methods and susceptibility criteria defined in this report.

All testing with the exception of testing at the Open Area Test Site was performed under the following environmental conditions:

|                     |                 |
|---------------------|-----------------|
| Temperature         | : 17 to 23 °C   |
| Humidity            | : 45 to 75 %    |
| Barometric Pressure | : 86 to 106 kPa |

All dates used in this report are in the format dd/mm/yy.

This assessment has been performed in accordance with the requirements of ISO/IEC 17025.

## **1.7 Deviations from Test Standards**

There were no deviations from the standards tested to.

## **Section 2:**

## **Measurement Uncertainty**

### **2.1 Application of Measurement Uncertainty**

The following table contains the measurement uncertainties for measurements

- The measured value related to the corresponding limit is used to decide whether equipment meets the requirements of the standard.
- The measurement uncertainty value for the measurement of each parameter is recorded in section 2.3 of this report.
- All values of measurement uncertainty are equal to or lower than the values in the table (section 2.2) below as required by the standard

## 2.2 Measurement Uncertainty Values

For the test data recorded, the following measurement uncertainty was calculated:

### Radio Testing – General Uncertainty Schedule

All statements of uncertainty are expanded standard uncertainty using a coverage factor of 1.96 to give a 95% confidence where no required test level exists.

#### [1] Adjacent Channel Power

Uncertainty in test result = **1.86dB**

#### [2] Carrier Power

Uncertainty in test result = **0.9 dB**

#### [3] Effective Radiated Power

Uncertainty in test result = **4.1 dB**

#### [4] Spurious Emissions

Uncertainty in test result = **4.1dB**

#### [5] Maximum frequency error

Uncertainty in test result = **3.6kHz**

#### [6] Frequency deviation

Uncertainty in test result = **3.6 kHz**

#### [7] Magnetic Field Emissions

Uncertainty in test result = **2.1 dB**

#### [8] Conducted Spurious

Uncertainty in test result = **0.9 dB**

#### [9] Channel Bandwidth

Uncertainty in test result = **3.6 kHz**

#### [10] Power Line Conduction

Uncertainty in test result = **3.5 dB**

#### [11] Spectrum Mask Measurements

Uncertainty in test result = **3.6 kHz (frequency)**

Uncertainty in test result = **0.9 dB (amplitude)**

#### [12] Transmission Time Measurement

Uncertainty in test result = **5.8% ± 10ns**



**Section 3:**

**Modifications**

**3.1 Modifications Performed During Assessment**

No modifications were performed during the assessment

**Appendix A:****Formal Emission Test Results**

Abbreviations used in the tables in this appendix:

|      |                                 |      |                                |
|------|---------------------------------|------|--------------------------------|
| Spec | : Specification                 | ALSR | : Absorber Lined Screened Room |
| Mod  | : Modification                  | OATS | : Open Area Test Site          |
|      |                                 | ATS  | : Alternative Test Site        |
| EUT  | : Equipment Under Test          |      |                                |
| SE   | : Support Equipment             | Ref  | : Reference                    |
|      |                                 | Freq | : Frequency                    |
| L    | : Live Power Line               |      |                                |
| N    | : Neutral Power Line            | MD   | : Measurement Distance         |
| E    | : Earth Power Line              | SD   | : Spec Distance                |
|      |                                 |      |                                |
| Pk   | : Peak Detector                 | Pol  | : Polarisation                 |
| QP   | : Quasi-Peak Detector           | H    | : Horizontal Polarisation      |
| Av   | : Average Detector              | V    | : Vertical Polarisation        |
|      |                                 |      |                                |
| CDN  | : Coupling & decoupling network | Mbps | : Mega Bits Per Second         |

**A1 Transmitter Peak Output Power**

Carrier power was verified with the EUT transmitting on its lowest, centre and highest carrier frequency in turn.

| Test Details:          |                                                      |
|------------------------|------------------------------------------------------|
| Regulation             | Title 47 of the CFR: Part15 Subpart (c) 15.247(b)(1) |
| Measurement standard   | ANSI C63.10:2003                                     |
| EUT sample number      | S18                                                  |
| Modification state     | 0                                                    |
| SE in test environment | None                                                 |
| SE isolated from EUT   | TraC PC                                              |
| EUT set up             | Refer to Appendix C                                  |
| Temperature            | 20°C                                                 |

| Data Rate = 1Mbps          |                           |              |        |
|----------------------------|---------------------------|--------------|--------|
| Channel Frequency<br>(MHz) | Peak Carrier Power<br>(W) | Limit<br>(W) | Result |
| 2402.0                     | 0.041                     | 1            | Pass   |
| 2441.0                     | 0.038                     |              | Pass   |
| 2480.0                     | 0.040                     |              | Pass   |
| Data Rate = 2Mbps          |                           |              |        |
| Channel Frequency<br>(MHz) | Peak Carrier Power<br>(W) | Limit<br>(W) | Result |
| 2402.0                     | 0.003                     | 1            | Pass   |
| 2441.0                     | 0.002                     |              | Pass   |
| 2480.0                     | 0.002                     |              | Pass   |
| Data Rate = 3Mbps          |                           |              |        |
| Channel Frequency<br>(MHz) | Peak Carrier Power<br>(W) | Limit<br>(W) | Result |
| 2402.0                     | 0.003                     | 1            | Pass   |
| 2441.0                     | 0.002                     |              | Pass   |
| 2480.0                     | 0.002                     |              | Pass   |

**Notes:**

Number of hopping channels employed is 79

**Conducted Measurement**

Measured Peak Carrier power includes highest gain of any antenna to be used.

Highest Gain of any antenna to be used = 2.3 dBi

Conducted measurements were performed with a temporary antenna connector provided by the client.

**A2 RF Antenna Conducted Spurious Emissions**

Measurement of conducted spurious emissions at the antenna port was performed using a peak detector with the RBW set to 100kHz and the VBW>RBW. Frequencies were scanned up through to the 10th harmonic with the EUT transmitting on its lowest, centre and highest carrier frequency in turn and operating at data rates of 1Mbps, 2Mbps & 3Mbps at each frequency. Plots were taken of all data rates and frequencies. Only plots of top middle and bottom frequencies for the data rate producing highest output power are contained in appendix B.

| Test Details           |                                                           |
|------------------------|-----------------------------------------------------------|
| Regulation             | Title 47 of the CFR: Part 15 Subpart (c) Clause 15.247(d) |
| Measurement standard   | ANSI C63.10:2003                                          |
| Frequency range        | 9 kHz to 25 GHz                                           |
| EUT sample number      | S18                                                       |
| Modification state     | 0                                                         |
| SE in test environment | None                                                      |
| SE isolated from EUT   | TraC PC                                                   |
| EUT set up             | Refer to Appendix C                                       |
| Temperature            | 20°C                                                      |

The worst case conducted emission measurements at the antenna port are listed below:

| Test Details : 1Mbps, 2402MHz, 2441MHz & 2480MHz   |                     |      |                                                         |                                                    |                        |         |
|----------------------------------------------------|---------------------|------|---------------------------------------------------------|----------------------------------------------------|------------------------|---------|
| Ref No.                                            | Measured Freq (MHz) | Det. | Is measured Frequency within the Restricted bands (Y/N) | Measured Peak Conducted power (RBW =100kHz) (dBuV) | 15.247(d) Limit (dBuV) | Summary |
| No significant emissions within 20 dB of the limit |                     |      |                                                         |                                                    |                        |         |

| Test Details : 2Mbps, 2402MHz, 2441MHz & 2480MHz   |                     |      |                                                         |                                                    |                        |         |
|----------------------------------------------------|---------------------|------|---------------------------------------------------------|----------------------------------------------------|------------------------|---------|
| Ref No.                                            | Measured Freq (MHz) | Det. | Is measured Frequency within the Restricted bands (Y/N) | Measured Peak Conducted power (RBW =100kHz) (dBuV) | 15.247(d) Limit (dBuV) | Summary |
| No significant emissions within 20 dB of the limit |                     |      |                                                         |                                                    |                        |         |

| Test Details : 3Mbps, 2402MHz, 2441MHz & 2480MHz   |                     |      |                                                         |                                                    |                        |         |
|----------------------------------------------------|---------------------|------|---------------------------------------------------------|----------------------------------------------------|------------------------|---------|
| Ref No.                                            | Measured Freq (MHz) | Det. | Is measured Frequency within the Restricted bands (Y/N) | Measured Peak Conducted power (RBW =100kHz) (dBuV) | 15.247(d) Limit (dBuV) | Summary |
| No significant emissions within 20 dB of the limit |                     |      |                                                         |                                                    |                        |         |

Measurement of conducted spurious emissions at the antenna port was performed using a peak detector with the RBW set to 100kHz and the VBW>RBW. Frequencies were scanned up through to the 10th harmonic with the EUT transmitting on its lowest, centre and highest carrier frequency in turn and operating at data rates of 1Mbps, 2Mbps & 3Mbps at each frequency. Plots were taken of all data rates and frequencies. Only plots of top middle and bottom frequencies for the data rate producing highest output power are contained in appendix B.

**Notes:**

1. The conducted emission limit for all emissions are based on a transmitted carrier level in a 100kHz RBW. With the EUT transmitting on its lowest, centre and highest carrier frequencies in turn, emissions from the EUT are required to be 20 dB below the level of the highest fundamental as measured within a 100 kHz RBW in accordance with 15.247(d) using a peak detector.
2. The RBW = 100 kHz, Video bandwidth (VBW) > RBW and the radio spectrum was investigated up to the 10th harmonic in accordance 15.33 (a)(1).
3. The measurements at 2400 MHz and 2483.5 MHz were made to ensure band edge compliance.
4. The carrier level was measured whilst varying the supply voltage between 85% and 105% of the nominal supply voltage as required by 15.31(e). No variation in carrier level was observed. All other emissions were at least 20dB below the test limit

The limit outside the restricted band in 100 kHz RBW is defined using the following formula in accordance with 15.247(d):

The limit in 100 kHz RBW = (Maximum Peak Conducted Carrier/100kHz) - 20dB

**A3 Radiated Electric Field Emissions within the Restricted Bands of 15.205**

Preliminary scans were performed using a peak detector with the RBW = 100kHz. The radiated electric field emission test applies to spurious emissions and harmonics that fall within the restricted bands listed in Section 15.205. The maximum permitted field strength is listed in Section 15.209. The EUT was set to transmit on its lowest, centre and highest carrier frequency and operating at data rates of 1Mbps, 2Mbps & 3Mbps at each frequency. Plots were taken of all data rates and frequencies. Only plots of top, middle and bottom frequencies for the data rate producing highest output power are contained in appendix B.

The following test site was used for final measurements as specified by the standard tested to:

3m open area test site : ☐

3m alternative test site : ☒

The effect of the EUT set-up on the measurements is summarised in note (c) below.

| Test Details: 1Mbps      |                                                                             |
|--------------------------|-----------------------------------------------------------------------------|
| Regulation               | Title 47 of the CFR: Part 15 Subpart (c) Clause 15.247(d) and Clause 15.205 |
| Measurement standard     | ANSI C63.10:2003                                                            |
| Frequency range          | 30MHz to 25 GHz                                                             |
| EUT sample number        | S20                                                                         |
| Modification state       | 0                                                                           |
| SE in test environment   | RFG464                                                                      |
| SE isolated from EUT     | REF829                                                                      |
| EUT set up               | Refer to Appendix C                                                         |
| Temperature              | 20°C                                                                        |
| Photographs (Appendix F) | Photograph 1 and 2                                                          |

The worst case radiated emission measurements for spurious emissions and harmonics that fall within the restricted bands are listed below:

| 2402 MHz – 1Mbps |             |      |                |                 |                  |              |                      |                  |                    |              |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|--------------------|--------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBµV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBµV/m) | EXTRAP FACT (dB) | FIELD ST'GH (µV/m) | LIMIT (µV/m) | Margin (dB) |
| 1                | 1601.635    | Pk   | 62.6           | 5.1             | 26.2             | 33.73        | 60.2                 | 0.0              | 60.2               | 74.0         | -13.8       |
| 2                | 1601.635    | AV   | 55.8           | 5.1             | 26.2             | 33.73        | 53.4                 | 0.0              | 53.4               | 54.0         | -0.6        |
| 3                | 2363.205    | Pk   | 44.9           | 4.5             | 29.4             | 33.74        | 45.1                 | 0.0              | 45.1               | 74.0         | -28.9       |
| 4                | 2363.205    | AV   | 31.2           | 4.5             | 29.4             | 33.74        | 31.4                 | 0.0              | 31.4               | 54.0         | -22.6       |
| 5                | 2401.907    | Pk   | 54.6           | 4.0             | 29.5             | N/A          | 88.1                 | 0.0              | 88.1               | 137.0        | -48.9       |
| 6                | 2973.962    | Pk   | 50.3           | 5.7             | 31.6             | 33.96        | 53.6                 | 0.0              | 53.6               | 74.0         | -20.4       |
| 7                | 2973.962    | AV   | 39.9           | 5.7             | 31.6             | 33.96        | 43.2                 | 0.0              | 43.2               | 54.0         | -10.8       |

| 2441 MHz – 1Mbps |                |      |                      |                       |                        |                    |                            |                        |                          |                 |                |
|------------------|----------------|------|----------------------|-----------------------|------------------------|--------------------|----------------------------|------------------------|--------------------------|-----------------|----------------|
| Ref No.          | FREQ.<br>(MHz) | Det. | MEAS<br>Rx<br>(dBμV) | CABLE<br>LOSS<br>(dB) | ANT<br>FACT.<br>(dB/m) | PRE<br>AMP<br>(dB) | FIELD<br>ST'GH<br>(dBμV/m) | EXTRAP<br>FACT<br>(dB) | FIELD<br>ST'GH<br>(μV/m) | LIMIT<br>(μV/m) | Margin<br>(dB) |
| 1                | 1627.721       | Pk   | 62.8                 | 5.2                   | 26.3                   | 33.72              | 60.6                       | 0.0                    | 60.6                     | 74.0            | -13.4          |
| 2                | 1627.721       | AV   | 55.9                 | 5.2                   | 26.3                   | 33.72              | 53.7                       | 0.0                    | 53.7                     | 54.0            | -0.3           |
| 3                | 2440.856       | Pk   | 58.8                 | 4.0                   | 29.7                   | N/A                | 92.5                       | 0.0                    | 92.5                     | 137.0           | -44.5          |

| 2480 MHz – 1Mbps |                |      |                      |                       |                        |                    |                            |                        |                          |                 |                |
|------------------|----------------|------|----------------------|-----------------------|------------------------|--------------------|----------------------------|------------------------|--------------------------|-----------------|----------------|
| Ref No.          | FREQ.<br>(MHz) | Det. | MEAS<br>Rx<br>(dBμV) | CABLE<br>LOSS<br>(dB) | ANT<br>FACT.<br>(dB/m) | PRE<br>AMP<br>(dB) | FIELD<br>ST'GH<br>(dBμV/m) | EXTRAP<br>FACT<br>(dB) | FIELD<br>ST'GH<br>(μV/m) | LIMIT<br>(μV/m) | Margin<br>(dB) |
| 1                | 1652.369       | Pk   | 61.7                 | 5.2                   | 26.4                   | 33.72              | 59.6                       | 0.0                    | 59.6                     | 74.3            | -14.7          |
| 2                | 1652.369       | AV   | 56.0                 | 5.2                   | 26.4                   | 33.72              | 53.9                       | 0.0                    | 53.9                     | 54.3            | -0.4           |
| 3                | 2480.054       | Pk   | 60.0                 | 4.5                   | 29.8                   | N/A                | 94.3                       | 0.0                    | 94.3                     | 137.0           | -42.7          |
| 4                | 2483.632       | Pk   | 59.9                 | 4.4                   | 29.8                   | 33.78              | 60.3                       | 0.0                    | 60.3                     | 74.0            | -13.7          |
| 5                | 2483.632       | AV   | 35.5                 | 4.4                   | 29.8                   | 33.78              | 35.9                       | 0.0                    | 35.9                     | 54.0            | -18.1          |

The effect of the EUT set-up on the measurements is summarised in note (c) below.

| Test Details: 2Mbps      |                                                                             |
|--------------------------|-----------------------------------------------------------------------------|
| Regulation               | Title 47 of the CFR: Part 15 Subpart (c) Clause 15.247(d) and Clause 15.205 |
| Measurement standard     | ANSI C63.10:2003                                                            |
| Frequency range          | 30MHz to 25 GHz                                                             |
| EUT sample number        | S20                                                                         |
| Modification state       | 0                                                                           |
| SE in test environment   | RFG464                                                                      |
| SE isolated from EUT     | REF829                                                                      |
| EUT set up               | Refer to Appendix C                                                         |
| Temperature              | 20°C                                                                        |
| Photographs (Appendix F) | Photograph 1 and 2                                                          |

The worst case radiated emission measurements for spurious emissions and harmonics that fall within the restricted bands are listed below:

| 2402 MHz – 2Mbps |             |      |                |                 |                  |              |                      |                  |                    |              |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|--------------------|--------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBµV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBµV/m) | EXTRAP FACT (dB) | FIELD ST'GH (µV/m) | LIMIT (µV/m) | Margin (dB) |
| 1                | 1601.611    | Pk   | 60.7           | 5.1             | 26.2             | 33.73        | 58.3                 | 0.0              | 58.3               | 74.0         | -15.7       |
| 2                | 1601.611    | AV   | 53.8           | 5.1             | 26.2             | 33.73        | 51.4                 | 0.0              | 51.4               | 54.0         | -2.6        |
| 3                | 2385.513    | Pk   | 48.0           | 4.8             | 29.4             | 33.75        | 48.5                 | 0.0              | 48.5               | 74.0         | -25.5       |
| 4                | 2385.513    | AV   | 31.4           | 4.8             | 29.4             | 33.75        | 31.9                 | 0.0              | 31.9               | 54.0         | -22.1       |
| 5                | 2401.939    | Pk   | 63.6           | 4.0             | 29.5             | N/A          | 97.1                 | 0.0              | 97.1               | 137.0        | -39.9       |
| 6                | 2974.046    | Pk   | 50.3           | 5.7             | 31.6             | 33.96        | 53.6                 | 0.0              | 53.6               | 77.1         | -23.5       |
| 7                | 2974.046    | AV   | 39.1           | 5.7             | 31.6             | 33.96        | 42.4                 | 0.0              | 42.4               | 57.1         | -14.7       |

| 2441 MHz – 2Mbps |             |      |                |                 |                  |              |                      |                  |                    |              |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|--------------------|--------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBµV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBµV/m) | EXTRAP FACT (dB) | FIELD ST'GH (µV/m) | LIMIT (µV/m) | Margin (dB) |
| 1                | 1627.675    | Pk   | 62.4           | 5.2             | 26.3             | 33.72        | 60.2                 | 0.0              | 60.2               | 81.9         | -21.7       |
| 2                | 1627.675    | AV   | 55.4           | 5.2             | 26.3             | 33.72        | 53.2                 | 0.0              | 53.2               | 61.9         | -8.7        |
| 3                | 2441.064    | Pk   | 68.2           | 4.0             | 29.7             | N/A          | 101.9                | 0.0              | 101.9              | 137.0        | -35.1       |



| 2480 MHz – 2Mbps |                |      |                      |                       |                        |                    |                            |                        |                          |                 |                |
|------------------|----------------|------|----------------------|-----------------------|------------------------|--------------------|----------------------------|------------------------|--------------------------|-----------------|----------------|
| Ref No.          | FREQ.<br>(MHz) | Det. | MEAS<br>Rx<br>(dBμV) | CABLE<br>LOSS<br>(dB) | ANT<br>FACT.<br>(dB/m) | PRE<br>AMP<br>(dB) | FIELD<br>ST'GH<br>(dBμV/m) | EXTRAP<br>FACT<br>(dB) | FIELD<br>ST'GH<br>(μV/m) | LIMIT<br>(μV/m) | Margin<br>(dB) |
| 1                | 1653.715       | Pk   | 62.3                 | 5.2                   | 26.4                   | 33.72              | 60.2                       | 0.0                    | 60.2                     | 82.9            | -22.7          |
| 2                | 1653.715       | AV   | 55.4                 | 5.2                   | 26.4                   | 33.72              | 53.3                       | 0.0                    | 53.3                     | 62.9            | -9.6           |
| 3                | 2479.840       | Pk   | 68.7                 | 4.4                   | 29.8                   | N/A                | 102.9                      | 0.0                    | 102.9                    | 137.0           | -34.1          |
| 4                | 2483.500       | Pk   | 56.3                 | 4.4                   | 29.8                   | 33.78              | 56.7                       | 0.0                    | 56.7                     | 74.0            | -17.3          |
| 5                | 2483.500       | AV   | 35.8                 | 4.4                   | 29.8                   | 33.78              | 36.2                       | 0.0                    | 36.2                     | 54.0            | -17.8          |
| 6                | 2496.032       | Pk   | 53.3                 | 4.7                   | 29.9                   | 33.78              | 54.1                       | 0.0                    | 54.1                     | 74.0            | -19.9          |
| 7                | 2496.032       | AV   | 32.5                 | 4.7                   | 29.9                   | 33.78              | 33.3                       | 0.0                    | 33.3                     | 54.0            | -20.7          |

The effect of the EUT set-up on the measurements is summarised in note (c) below.

| Test Details: 3Mbps      |                                                                             |
|--------------------------|-----------------------------------------------------------------------------|
| Regulation               | Title 47 of the CFR: Part 15 Subpart (c) Clause 15.247(d) and Clause 15.205 |
| Measurement standard     | ANSI C63.10:2003                                                            |
| Frequency range          | 30MHz to 25 GHz                                                             |
| EUT sample number        | S20                                                                         |
| Modification state       | 0                                                                           |
| SE in test environment   | RFG464                                                                      |
| SE isolated from EUT     | REF829                                                                      |
| EUT set up               | Refer to Appendix C                                                         |
| Temperature              | 20°C                                                                        |
| Photographs (Appendix F) | Photograph 1 and 2                                                          |

The worst case radiated emission measurements for spurious emissions and harmonics that fall within the restricted bands are listed below:

| 2402 MHz – 3Mbps |             |      |                |                 |                  |              |                      |                  |                    |              |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|--------------------|--------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBµV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBµV/m) | EXTRAP FACT (dB) | FIELD ST'GH (µV/m) | LIMIT (µV/m) | Margin (dB) |
| 1                | 1600.353    | Pk   | 60.7           | 5.0             | 26.2             | 33.73        | 58.2                 | 0.0              | 58.2               | 74.0         | -15.8       |
| 2                | 1600.353    | AV   | 54.8           | 5.0             | 26.2             | 33.73        | 52.3                 | 0.0              | 52.3               | 54.0         | -1.7        |
| 3                | 1650.923    | Pk   | 61.2           | 5.0             | 26.4             | 33.72        | 58.9                 | 0.0              | 58.9               | 77.1         | -18.2       |
| 4                | 1650.923    | AV   | 36.2           | 5.0             | 26.4             | 33.72        | 33.9                 | 0.0              | 33.9               | 57.1         | -23.2       |
| 5                | 2386.154    | Pk   | 49.6           | 4.9             | 29.5             | 33.75        | 50.3                 | 0.0              | 50.3               | 74.0         | -23.7       |
| 6                | 2386.154    | AV   | 31.7           | 4.9             | 29.5             | 33.75        | 32.4                 | 0.0              | 32.4               | 54.0         | -21.6       |
| 7                | 2401.872    | Pk   | 63.6           | 4.0             | 29.5             | N/A          | 97.1                 | 0.0              | 97.1               | 137.0        | -39.9       |
| 8                | 2974.016    | Pk   | 50.2           | 5.7             | 31.6             | 33.96        | 53.5                 | 0.0              | 53.5               | 77.1         | -23.6       |
| 9                | 2974.016    | AV   | 39.3           | 5.7             | 31.6             | 33.96        | 42.6                 | 0.0              | 42.6               | 57.1         | -14.5       |

| 2441 MHz – 3Mbps |             |      |                |                 |                  |              |                      |                  |                    |              |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|--------------------|--------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBµV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBµV/m) | EXTRAP FACT (dB) | FIELD ST'GH (µV/m) | LIMIT (µV/m) | Margin (dB) |
| 1                | 1626.337    | Pk   | 57.5           | 5.1             | 26.3             | 33.72        | 55.2                 | 0.0              | 55.2               | 74.0         | -18.8       |
| 2                | 1626.337    | AV   | 51.2           | 5.1             | 26.3             | 33.72        | 48.9                 | 0.0              | 48.9               | 54.0         | -5.1        |
| 3                | 1626.923    | Pk   | 56.0           | 5.2             | 26.3             | 33.72        | 53.8                 | 0.0              | 53.8               | 80.6         | -26.8       |
| 4                | 1626.923    | AV   | 33.3           | 5.2             | 26.3             | 33.72        | 31.1                 | 0.0              | 31.1               | 60.6         | -29.5       |
| 5                | 2440.928    | Pk   | 66.9           | 4.0             | 29.7             | N/A          | 100.6                | 0.0              | 100.6              | 137.0        | -36.4       |

| 2480 MHz – 3Mbps |                |      |                      |                       |                        |                    |                            |                        |                          |                 |                |
|------------------|----------------|------|----------------------|-----------------------|------------------------|--------------------|----------------------------|------------------------|--------------------------|-----------------|----------------|
| Ref No.          | FREQ.<br>(MHz) | Det. | MEAS<br>Rx<br>(dBμV) | CABLE<br>LOSS<br>(dB) | ANT<br>FACT.<br>(dB/m) | PRE<br>AMP<br>(dB) | FIELD<br>ST'GH<br>(dBμV/m) | EXTRAP<br>FACT<br>(dB) | FIELD<br>ST'GH<br>(μV/m) | LIMIT<br>(μV/m) | Margin<br>(dB) |
| 1                | 1652.337       | Pk   | 58.4                 | 5.2                   | 26.4                   | 33.72              | 56.3                       | 0.0                    | 56.3                     | 81.7            | -25.4          |
| 2                | 1652.337       | AV   | 52.4                 | 5.2                   | 26.4                   | 33.72              | 50.3                       | 0.0                    | 50.3                     | 61.7            | -11.4          |
| 3                | 2479.944       | Pk   | 67.4                 | 4.5                   | 29.8                   | N/A                | 101.7                      | 0.0                    | 101.7                    | 137.0           | -35.3          |
| 4                | 2483.500       | Pk   | 56.0                 | 4.4                   | 29.8                   | 33.78              | 56.4                       | 0.0                    | 56.4                     | 74.0            | -17.6          |
| 5                | 2483.500       | AV   | 36.2                 | 4.4                   | 29.8                   | 33.78              | 36.6                       | 0.0                    | 36.6                     | 54.0            | -17.4          |
| 6                | 2483.628       | Pk   | 55.7                 | 4.4                   | 29.8                   | 33.78              | 56.1                       | 0.0                    | 56.1                     | 74.0            | -17.9          |
| 7                | 2483.628       | AV   | 35.3                 | 4.4                   | 29.8                   | 33.78              | 35.7                       | 0.0                    | 35.7                     | 54.0            | -18.3          |
| 8                | 2495.987       | Pk   | 53.1                 | 4.7                   | 29.9                   | 33.78              | 53.9                       | 0.0                    | 53.9                     | 74.0            | -20.1          |
| 9                | 2495.987       | AV   | 32.2                 | 4.7                   | 29.9                   | 33.78              | 33.0                       | 0.0                    | 33.0                     | 54.0            | -21.0          |

The effect of the EUT set-up on the measurements is summarised in note (c) below.

| Test Details: 1Mbps      |                                                                             |
|--------------------------|-----------------------------------------------------------------------------|
| Regulation               | Title 47 of the CFR: Part 15 Subpart (c) Clause 15.247(d) and Clause 15.205 |
| Measurement standard     | ANSI C63.10:2003                                                            |
| Frequency range          | 30MHz to 25 GHz                                                             |
| EUT sample number        | S21                                                                         |
| Modification state       | 0                                                                           |
| SE in test environment   | RFG464                                                                      |
| SE isolated from EUT     | REF829                                                                      |
| EUT set up               | Refer to Appendix C                                                         |
| Temperature              | 20°C                                                                        |
| Photographs (Appendix F) | Photograph 3 and 4                                                          |

The worst case radiated emission measurements for spurious emissions and harmonics that fall within the restricted bands are listed below:

| 2402 MHz – 1Mbps |             |      |                |                 |                  |              |                      |                  |                      |                |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|----------------------|----------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBμV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBμV/m) | EXTRAP FACT (dB) | FIELD ST'GH (dBμV/m) | LIMIT (dBμV/m) | Margin (dB) |
| 1                | 1600.352    | Pk   | 56.5           | 5.0             | 26.2             | 33.73        | 54.0                 | 0                | 54.0                 | 74.0           | -20.0       |
| 2                | 1600.352    | AV   | 53.1           | 5.0             | 26.2             | 33.73        | 50.6                 | 0                | 50.6                 | 54.0           | -3.4        |
| 3                | 2376.030    | Pk   | 59.0           | 4.5             | 29.4             | 33.75        | 59.2                 | 0                | 59.2                 | 74.0           | -14.8       |
| 4                | 2376.030    | AV   | 52.5           | 4.5             | 29.4             | 33.75        | 52.7                 | 0                | 52.7                 | 54.0           | -1.3        |
| 5                | 2386.184    | Pk   | 59.4           | 4.9             | 29.5             | 33.75        | 60.1                 | 0                | 60.1                 | 74.0           | -13.9       |
| 6                | 2386.184    | AV   | 50.1           | 4.9             | 29.5             | 33.75        | 50.8                 | 0                | 50.8                 | 54.0           | -3.2        |
| 7                | 2401.814    | Pk   | 82.0           | 4.0             | 29.5             | N/A          | 115.5                | 0                | 115.5                | 137.0          | -21.5       |
| 8                | 2974.009    | Pk   | 49.9           | 5.7             | 31.6             | 33.96        | 53.2                 | 0                | 53.2                 | 95.5           | -42.3       |
| 9                | 2974.009    | AV   | 40.7           | 5.7             | 31.6             | 33.96        | 44.0                 | 0                | 44.0                 | 75.5           | -31.5       |
| 10               | 4803.878    | Pk   | 26.6           | 7.4             | 35.9             | N/A          | 69.9                 | -9.5             | 60.4                 | 74.0           | -13.6       |
| 11               | 4803.878    | AV   | 15.3           | 7.4             | 35.9             | N/A          | 58.6                 | -9.5             | 49.1                 | 54.0           | -4.9        |
| 12               | 7205.497    | Pk   | 56.3           | 10.3            | 38.9             | 34.37        | 71.1                 | -9.5             | 61.6                 | 95.5           | -33.9       |
| 13               | 7205.497    | AV   | 43.5           | 10.3            | 38.9             | 34.37        | 58.3                 | -9.5             | 48.8                 | 75.5           | -26.7       |
| 14               | 12010.610   | Pk   | 45.0           | 7.9             | 39.0             | 34.44        | 57.5                 | -9.5             | 48.0                 | 74.0           | -26.0       |
| 15               | 12010.610   | AV   | 33.1           | 7.9             | 39.0             | 34.44        | 45.6                 | -9.5             | 36.1                 | 54.0           | -17.9       |

| 2441 MHz – 1Mbps |             |      |                |                 |                  |              |                      |                  |                      |                |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|----------------------|----------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBμV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBμV/m) | EXTRAP FACT (dB) | FIELD ST'GH (dBμV/m) | LIMIT (dBμV/m) | Margin (dB) |
| 1                | 1626.260    | Pk   | 58.1           | 5.1             | 26.3             | 33.72        | 55.8                 | 0                | 55.8                 | 74.0           | -18.2       |
| 2                | 1626.260    | AV   | 52.9           | 5.1             | 26.3             | 33.72        | 50.6                 | 0                | 50.6                 | 54.0           | -3.4        |
| 3                | 2441.146    | Pk   | 82.1           | 4.0             | 29.7             | N/A          | 115.8                | 0                | 115.8                | 137.0          | -21.2       |
| 4                | 3051.887    | Pk   | 48.6           | 6.6             | 31.9             | 33.99        | 53.1                 | 0                | 53.1                 | 95.8           | -42.7       |
| 5                | 3051.887    | AV   | 41.3           | 6.6             | 31.9             | 33.99        | 45.8                 | 0                | 45.8                 | 75.8           | -30.0       |
| 6                | 4882.147    | Pk   | 28.3           | 8.0             | 36.1             | N/A          | 72.4                 | -9.5             | 62.9                 | 74.0           | -11.1       |
| 7                | 4882.147    | AV   | 18.0           | 8.0             | 36.1             | N/A          | 62.1                 | -9.5             | 52.6                 | 54.0           | -1.4        |
| 8                | 7323.539    | Pk   | 54.1           | 10.5            | 39.1             | 34.42        | 69.3                 | -9.5             | 59.8                 | 74.0           | -14.2       |
| 9                | 7323.539    | AV   | 41.3           | 10.5            | 39.1             | 34.42        | 56.5                 | -9.5             | 47.0                 | 54.0           | -7.0        |
| 10               | 12204.233   | Pk   | 47.5           | 8.5             | 38.9             | 34.32        | 60.6                 | -9.5             | 51.1                 | 74.0           | -22.9       |
| 11               | 12204.233   | AV   | 35.0           | 8.5             | 38.9             | 34.32        | 48.1                 | -9.5             | 38.6                 | 54.0           | -15.4       |

| 2480 MHz – 1Mbps |             |      |                |                 |                  |              |                      |                  |                      |                |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|----------------------|----------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBμV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBμV/m) | EXTRAP FACT (dB) | FIELD ST'GH (dBμV/m) | LIMIT (dBμV/m) | Margin (dB) |
| 1                | 1652.330    | Pk   | 57.2           | 5.2             | 26.4             | 33.72        | 55.1                 | 0.0              | 55.1                 | 98.1           | -43.0       |
| 2                | 1652.330    | AV   | 55.7           | 5.2             | 26.4             | 33.72        | 53.6                 | 0.0              | 53.6                 | 78.1           | -24.5       |
| 3                | 2480.017    | Pk   | 83.8           | 4.5             | 29.8             | N/A          | 118.1                | 0.0              | 118.1                | 137.0          | -18.9       |
| 4                | 2483.500    | Pk   | 64.3           | 4.4             | 29.8             | 33.78        | 64.7                 | 0.0              | 64.7                 | 74.0           | -9.3        |
| 5                | 2483.500    | AV   | 51.8           | 4.4             | 29.8             | 33.78        | 52.2                 | 0.0              | 52.2                 | 54.0           | -1.8        |
| 6                | 3130.019    | Pk   | 45.0           | 6.8             | 32.2             | 34.03        | 50.0                 | 0.0              | 50.0                 | 98.1           | -48.1       |
| 7                | 3130.019    | AV   | 35.1           | 6.8             | 32.2             | 34.03        | 40.1                 | 0.0              | 40.1                 | 78.1           | -38.0       |
| 8                | 4959.807    | Pk   | 28.5           | 8.3             | 36.2             | N/A          | 73.0                 | -9.5             | 63.5                 | 74.0           | -10.5       |
| 9                | 4959.807    | AV   | 17.6           | 8.3             | 36.2             | N/A          | 62.1                 | -9.5             | 52.6                 | 54.0           | -1.4        |
| 10               | 7440.524    | Pk   | 58.2           | 10.8            | 39.3             | 34.46        | 73.8                 | -9.5             | 64.3                 | 74.0           | -9.7        |
| 11               | 7440.524    | AV   | 45.6           | 10.8            | 39.3             | 34.46        | 61.2                 | -9.5             | 51.7                 | 54.0           | -2.3        |
| 12               | 12400.850   | Pk   | 53.7           | 8.4             | 38.7             | 34.19        | 66.6                 | -9.5             | 57.1                 | 74.0           | -16.9       |
| 13               | 12400.850   | AV   | 40.9           | 8.4             | 38.7             | 34.19        | 53.8                 | -9.5             | 44.3                 | 54.0           | -9.7        |

The effect of the EUT set-up on the measurements is summarised in note (c) below.

| Test Details: 2Mbps      |                                                                             |
|--------------------------|-----------------------------------------------------------------------------|
| Regulation               | Title 47 of the CFR: Part 15 Subpart (c) Clause 15.247(d) and Clause 15.205 |
| Measurement standard     | ANSI C63.10:2003                                                            |
| Frequency range          | 30MHz to 25 GHz                                                             |
| EUT sample number        | S21                                                                         |
| Modification state       | 0                                                                           |
| SE in test environment   | RFG464                                                                      |
| SE isolated from EUT     | REF829                                                                      |
| EUT set up               | Refer to Appendix C                                                         |
| Temperature              | 20°C                                                                        |
| Photographs (Appendix F) | Photograph 3 and 4                                                          |

The worst case radiated emission measurements for spurious emissions and harmonics that fall within the restricted bands are listed below:

| 2402 MHz – 2Mbps |             |      |                |                 |                  |              |                      |                  |                      |                |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|----------------------|----------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBµV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBµV/m) | EXTRAP FACT (dB) | FIELD ST'GH (dBµV/m) | LIMIT (dBµV/m) | Margin (dB) |
| 1                | 1600.320    | Pk   | 58.1           | 5.0             | 26.2             | 33.73        | 55.6                 | 0.0              | 55.6                 | 74.0           | -18.4       |
| 2                | 1600.320    | AV   | 51.8           | 5.0             | 26.2             | 33.73        | 49.3                 | 0.0              | 49.3                 | 54.0           | -4.7        |
| 3                | 2386.112    | Pk   | 60.0           | 4.9             | 29.5             | 33.75        | 60.7                 | 0.0              | 60.7                 | 74.0           | -13.3       |
| 4                | 2386.112    | AV   | 39.2           | 4.9             | 29.5             | 33.75        | 39.9                 | 0.0              | 39.9                 | 54.0           | -14.1       |
| 5                | 2401.824    | Pk   | 76.3           | 4.0             | 29.5             | N/A          | 109.8                | 0.0              | 109.8                | 137.0          | -27.2       |
| 6                | 2974.029    | Pk   | 49.7           | 5.7             | 31.6             | 33.96        | 53.0                 | 0.0              | 53.0                 | 99.8           | -46.8       |
| 7                | 2974.029    | AV   | 39.1           | 5.7             | 31.6             | 33.96        | 42.4                 | 0.0              | 42.4                 | 79.8           | -37.4       |
| 8                | 7206.529    | Pk   | 56.8           | 10.3            | 38.9             | 34.37        | 71.6                 | -9.5             | 62.1                 | 99.8           | -37.7       |
| 9                | 7206.529    | AV   | 44.0           | 10.3            | 38.9             | 34.37        | 58.8                 | -9.5             | 49.3                 | 79.8           | -30.5       |

| 2441 MHz – 2Mbps |             |      |                |                 |                  |              |                      |                  |                      |                |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|----------------------|----------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBµV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBµV/m) | EXTRAP FACT (dB) | FIELD ST'GH (dBµV/m) | LIMIT (dBµV/m) | Margin (dB) |
| 1                | 1626.260    | Pk   | 58.1           | 5.1             | 26.3             | 33.72        | 55.8                 | 0.0              | 55.8                 | 74.0           | -18.2       |
| 2                | 1626.260    | AV   | 52.9           | 5.1             | 26.3             | 33.72        | 50.6                 | 0.0              | 50.6                 | 54.0           | -3.4        |
| 3                | 2441.146    | Pk   | 82.1           | 4.0             | 29.7             | N/A          | 115.8                | 0.0              | 115.8                | 137.0          | -21.2       |
| 4                | 3051.887    | Pk   | 48.6           | 6.6             | 31.9             | 33.99        | 53.1                 | 0.0              | 53.1                 | 95.8           | -42.7       |
| 5                | 3051.887    | AV   | 41.3           | 6.6             | 31.9             | 33.99        | 45.8                 | 0.0              | 45.8                 | 75.8           | -30.0       |
| 6                | 7323.539    | Pk   | 54.1           | 10.5            | 39.1             | 34.42        | 69.3                 | -9.5             | 59.8                 | 74.0           | -14.2       |
| 7                | 7323.539    | AV   | 41.3           | 10.5            | 39.1             | 34.42        | 56.5                 | -9.5             | 47.0                 | 54.0           | -7.0        |

| 2480 MHz – 2Mbps |             |      |                |                 |                  |              |                      |                  |                      |                |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|----------------------|----------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBμV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBμV/m) | EXTRAP FACT (dB) | FIELD ST'GH (dBμV/m) | LIMIT (dBμV/m) | Margin (dB) |
| 1                | 1652.330    | Pk   | 57.2           | 5.2             | 26.4             | 33.72        | 55.1                 | 0.0              | 55.1                 | 98.1           | -43.0       |
| 2                | 1652.330    | AV   | 55.7           | 5.2             | 26.4             | 33.72        | 53.6                 | 0.0              | 53.6                 | 78.1           | -24.5       |
| 3                | 2480.017    | Pk   | 83.8           | 4.5             | 29.8             | N/A          | 118.1                | 0.0              | 118.1                | 137.0          | -18.9       |
| 4                | 2483.500    | Pk   | 64.3           | 4.4             | 29.8             | 33.78        | 64.7                 | 0.0              | 64.7                 | 74.0           | -9.3        |
| 5                | 2483.500    | AV   | 51.8           | 4.4             | 29.8             | 33.78        | 52.2                 | 0.0              | 52.2                 | 54.0           | -1.8        |
| 6                | 3130.019    | Pk   | 45.0           | 6.8             | 32.2             | 34.03        | 50.0                 | 0.0              | 50.0                 | 98.1           | -48.1       |
| 7                | 3130.019    | AV   | 35.1           | 6.8             | 32.2             | 34.03        | 40.1                 | 0.0              | 40.1                 | 78.1           | -38.0       |
| 8                | 7440.524    | Pk   | 58.2           | 10.8            | 39.3             | 34.46        | 73.8                 | -9.5             | 64.3                 | 74.0           | -9.7        |
| 9                | 7440.524    | AV   | 45.6           | 10.8            | 39.3             | 34.46        | 61.2                 | -9.5             | 51.7                 | 54.0           | -2.3        |



The effect of the EUT set-up on the measurements is summarised in note (c) below.

| Test Details: 3Mbps      |                                                                             |
|--------------------------|-----------------------------------------------------------------------------|
| Regulation               | Title 47 of the CFR: Part 15 Subpart (c) Clause 15.247(d) and Clause 15.205 |
| Measurement standard     | ANSI C63.10:2003                                                            |
| Frequency range          | 30MHz to 25 GHz                                                             |
| EUT sample number        | S21                                                                         |
| Modification state       | 0                                                                           |
| SE in test environment   | RFG464                                                                      |
| SE isolated from EUT     | REF829                                                                      |
| EUT set up               | Refer to Appendix C                                                         |
| Temperature              | 20°C                                                                        |
| Photographs (Appendix F) | Photograph 3 and 4                                                          |

The worst case radiated emission measurements for spurious emissions and harmonics that fall within the restricted bands are listed below:

| 2402 MHz – 3Mbps |             |      |                |                 |                  |              |                      |                  |                      |                |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|----------------------|----------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBµV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBµV/m) | EXTRAP FACT (dB) | FIELD ST'GH (dBµV/m) | LIMIT (dBµV/m) | Margin (dB) |
| 1                | 1600.320    | Pk   | 58.9           | 5.0             | 26.2             | 33.73        | 56.4                 | 0.0              | 56.4                 | 74.0           | -17.6       |
| 2                | 1600.320    | AV   | 52.7           | 5.0             | 26.2             | 33.73        | 50.2                 | 0.0              | 50.2                 | 54.0           | -3.8        |
| 3                | 2385.968    | Pk   | 59.3           | 4.9             | 29.5             | 33.75        | 60.0                 | 0.0              | 60.0                 | 74.0           | -14.0       |
| 4                | 2385.968    | AV   | 38.5           | 4.9             | 29.5             | 33.75        | 39.2                 | 0.0              | 39.2                 | 54.0           | -14.8       |
| 5                | 2402.067    | Pk   | 76.3           | 4.0             | 29.5             | N/A          | 109.8                | 0.0              | 109.8                | 137.0          | -27.2       |
| 6                | 2973.962    | Pk   | 50.1           | 5.7             | 31.6             | 33.96        | 53.4                 | 0.0              | 53.4                 | 99.8           | -46.4       |
| 7                | 2973.962    | AV   | 39.8           | 5.7             | 31.6             | 33.96        | 43.1                 | 0.0              | 43.1                 | 79.8           | -36.7       |

| 2441 MHz – 3Mbps |             |      |                |                 |                  |              |                      |                  |                      |                |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|----------------------|----------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBµV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBµV/m) | EXTRAP FACT (dB) | FIELD ST'GH (dBµV/m) | LIMIT (dBµV/m) | Margin (dB) |
| 1                | 1626.352    | Pk   | 57.3           | 5.1             | 26.3             | 33.72        | 55.0                 | 0.0              | 55.0                 | 74.0           | -19.0       |
| 2                | 1626.352    | AV   | 50.7           | 5.1             | 26.3             | 33.72        | 48.4                 | 0.0              | 48.4                 | 54.0           | -5.6        |
| 3                | 2441.016    | Pk   | 75.6           | 4.0             | 29.7             | N/A          | 109.3                | 0.0              | 109.3                | 137.0          | -27.7       |
| 4                | 3052.038    | Pk   | 48.6           | 6.6             | 31.9             | 33.99        | 53.1                 | 0.0              | 53.1                 | 99.3           | -46.2       |
| 5                | 3052.038    | AV   | 37.1           | 6.6             | 31.9             | 33.99        | 41.6                 | 0.0              | 41.6                 | 79.3           | -37.7       |

| 2480 MHz – 3Mbps |             |      |                |                 |                  |              |                      |                  |                      |                |             |
|------------------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|----------------------|----------------|-------------|
| Ref No.          | FREQ. (MHz) | Det. | MEAS Rx (dBμV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBμV/m) | EXTRAP FACT (dB) | FIELD ST'GH (dBμV/m) | LIMIT (dBμV/m) | Margin (dB) |
| 1                | 1652.288    | Pk   | 57.3           | 5.2             | 26.4             | 33.72        | 55.2                 | 0.0              | 55.2                 | 99.6           | -44.4       |
| 2                | 1652.288    | AV   | 50.8           | 5.2             | 26.4             | 33.72        | 48.7                 | 0.0              | 48.7                 | 79.6           | -30.9       |
| 3                | 2479.872    | Pk   | 75.4           | 4.4             | 29.8             | N/A          | 109.6                | 0.0              | 109.6                | 137.0          | -27.4       |
| 4                | 2483.500    | Pk   | 63.1           | 4.4             | 29.8             | 33.78        | 63.5                 | 0.0              | 63.5                 | 74.0           | -10.5       |
| 5                | 2483.500    | AV   | 44.4           | 4.4             | 29.8             | 33.78        | 44.8                 | 0.0              | 44.8                 | 54.0           | -9.2        |
| 6                | 2496.042    | Pk   | 55.9           | 4.7             | 29.9             | 33.78        | 56.7                 | 0.0              | 56.7                 | 74.0           | -17.3       |
| 7                | 2496.042    | AV   | 32.5           | 4.7             | 29.9             | 33.78        | 33.3                 | 0.0              | 33.3                 | 54.0           | -20.7       |

**Notes:**

- 1 Any testing performed below 30 MHz was performed using a magnetic loop antenna in accordance with ANSI C63.10: section 4.5, Table 1
- 2 In accordance with 15.35(b), above 1 GHz, emissions measured using a peak detector do not exceed a level 20 dB above the average limit.
- 3 Measurements at 2400 & 2483.5 MHz were made to ensure band edge compliance.
- 4 Testing was performed with the EUT orientated in three orthogonal planes and the maximum emissions level recorded. In addition, the EUT antenna was varied within its range of motion in order to maximise emissions.
- 5 For Frequencies below 1 GHz, RBW= 100 kHz, testing was performed with CISPR16 compliant test receiver with QP detector. Above 1 GHz tests were performed using a spectrum analyser using the following settings:

Peak                      RBW=VBW= 1MHz  
Average                RBW= 1 MHz, VBW = 10 Hz or using an average detector.

These settings as per ANSI C63.10 and DA 00-705.

- 6 In accordance with DA 00-705, the average level of the spurious radiated emission may be reduced by the duty cycle correction factor. If the dwell time per channel (refer to the measured channel occupancy time, section A7 of this test report) of the hopping signal is less than 100ms then the average measurement may be further adjusted by the duty cycle correction factor which is derived from

$$20\log_{10}\left(\frac{\text{dwell time}}{100\text{ms}}\right)$$

The upper and lower frequency of the measurement range was decided according to 47 CFR 15.2008 Clause 15.33(a) and 15.33(a)(1).

Radiated emission limits (47 CFR 15: Clause 15.209) for emissions falling within the restricted bands defined in 15.205(a):

| Frequency of emission (MHz) | Field strength V/m | Measurement Distance m | Field strength dB V/m |
|-----------------------------|--------------------|------------------------|-----------------------|
| 0.009-0.490                 | 2400/F(kHz)        | 300                    | 67.6/F (kHz)          |
| 0.490-1.705                 | 24000/F(kHz)       | 30                     | 87.6/F (kHz)          |
| 1.705-30                    | 30                 | 30                     | 29.5                  |
| 30-88                       | 100                | 3                      | 40.0                  |
| 88-216                      | 150                | 3                      | 43.5                  |
| 216-960                     | 200                | 3                      | 46.0                  |
| Above 960                   | 500                | 3                      | 54.0                  |

**Notes:**

- (a) Where results have been measured at one distance, and a signal level displayed at another, the results have been extrapolated using the following formula:

$$\text{Extrapolation (dB)} = 20 \log_{10} \left( \frac{\text{measurement distance}}{\text{specification distance}} \right)$$

The results displayed take into account applicable antenna factors and cable losses.

- (b) The levels may have been rounded for display purposes.
- (c) The following table summarises the effect of the EUT operating mode, internal configuration and arrangement of cables / samples on the measured emission levels :

|                                                                                                                                                                                                                                                                                                                                | See (i) | See (ii) | See (iii) | See (iv) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|-----------|----------|
| Effect of EUT operating mode on emission levels                                                                                                                                                                                                                                                                                | ✓       |          |           |          |
| Effect of EUT internal configuration on emission levels                                                                                                                                                                                                                                                                        |         | ✓        |           |          |
| Effect of Position of EUT cables & samples on emission levels                                                                                                                                                                                                                                                                  |         | ✓        |           |          |
| (i) Parameter defined by standard and / or single possible, refer to Appendix D<br>(ii) Parameter defined by client and / or single possible, refer to Appendix D<br>(iii) Parameter had a negligible effect on emission levels, refer to Appendix D<br>(iv) Worst case determined by initial measurement, refer to Appendix D |         |          |           |          |

**A4 20 dB Bandwidth**

Title 47 of the CFR: Part 15 Subpart (c) 15.247(a)(1)(i) requires the measurement of the bandwidth of the transmission between the -20 dB points on the transmitted spectrum. The results of this test determine the limits for channel spacing.

| Test Details:          |                                                       |
|------------------------|-------------------------------------------------------|
| Regulation             | Title 47 of the CFR: Part 15 Subpart (c) 15.247(a)(1) |
| EUT sample number      | S18                                                   |
| Modification state     | 0                                                     |
| SE in test environment | None                                                  |
| SE isolated from EUT   | TRaC PC                                               |
| Temperature            | 20°C                                                  |
| EUT set up             | Refer to Appendix C                                   |

| 1Mbps                   |                                |
|-------------------------|--------------------------------|
| Channel Frequency (MHz) | Measured 20 dB Bandwidth (kHz) |
| 2402                    | 1134                           |
| 2441                    | 1134                           |
| 2480                    | 1134                           |
| 2Mbps                   |                                |
| Channel Frequency (MHz) | Measured 20 dB Bandwidth (kHz) |
| 2402                    | 1375                           |
| 2441                    | 1375                           |
| 2480                    | 1375                           |
| 3Mbps                   |                                |
| Channel Frequency (MHz) | Measured 20 dB Bandwidth (kHz) |
| 2402                    | 1391                           |
| 2441                    | 1391                           |
| 2480                    | 1391                           |

Plots of the 20 dB bandwidth are contained in Appendix B of this test report.

**A5 Carrier Frequency Separation**

For systems with an output power greater than 125mW the channel separation shall be a minimum of 25 kHz or the 20 dB bandwidth, whichever is the greater. For systems with output power less than 125mW the channel separation shall be a minimum of 25 kHz or  $\frac{2}{3}$  of the 20 dB bandwidth whichever is the greater. The formal measurements are detailed below:

| Test Details:          |                                                       |
|------------------------|-------------------------------------------------------|
| Regulation             | Title 47 of the CFR: Part 15 Subpart (c) 15.247(a)(1) |
| EUT sample number      | S18                                                   |
| Modification state     | 0                                                     |
| SE in test environment | None                                                  |
| SE isolated from EUT   | TRaC PC                                               |
| Temperature            | 20°C                                                  |
| EUT set up             | Refer to Appendix C                                   |

| Operational Data Rate | Measured Channel Spacing (kHz)                                                                      | Measured 20 dB Bandwidth (kHz) | Limit (kHz) | Result |
|-----------------------|-----------------------------------------------------------------------------------------------------|--------------------------------|-------------|--------|
| 1Mbps                 | 1019                                                                                                | 1134                           | 756         | Pass   |
| 2Mbps                 | 1009                                                                                                | 1375                           | 917         | Pass   |
| 3Mbps                 | 1003                                                                                                | 1391                           | 927         | Pass   |
| Limit                 | 25 kHz<br>or<br>$\frac{2}{3}$ of the 20 dB bandwidth of the hopping channel<br>Whichever is greater |                                |             |        |

Plots of the channel spacing are contained in Appendix B of this test report.

**A6 Hopping frequencies**

Hopping frequencies were verified using a spectrum analyser, while the EUT was operating in its normal frequency hopping mode.

| Test Details:          |                                                           |
|------------------------|-----------------------------------------------------------|
| Regulation             | Title 47 of the CFR : Part 15 Subpart (c) 15.247(a)(1)(i) |
| EUT sample number      | S18                                                       |
| Modification state     | 0                                                         |
| SE in test environment | None                                                      |
| SE isolated from EUT   | TRaC PC                                                   |
| Temperature            | 20°C                                                      |
| EUT set up             | Refer to Appendix C                                       |

| No. of Hopping Channels | Requirement | Result |
|-------------------------|-------------|--------|
| 79                      | >15         | Pass   |

Plots showing the hopping channels are contained in Appendix B

**A7 Channel Occupancy**

Channel occupancy time was verified using a spectrum analyser in zero span mode, centred on the middle hopping channel frequency (2441.0 MHz), while the EUT was operating in its normal frequency hopping mode. The other channels were then verified to ensure that the channel occupancy was identical for all channels.

| Test Details:          |                                                      |
|------------------------|------------------------------------------------------|
| Regulation             | Title 47 of the CFR: Part15 Subpart (c) 15.247(a)(1) |
| EUT sample number      | S18                                                  |
| Modification state     | 0                                                    |
| SE in test environment | None                                                 |
| SE isolated from EUT   | TRaC PC                                              |
| Temperature            | 20°C                                                 |
| EUT set up             | Refer to Appendix C                                  |

| $T_{occ}$<br>(ms) | MP<br>(s) | MPTX | AOT<br>(s) | Limit<br>(s) | Result |
|-------------------|-----------|------|------------|--------------|--------|
| 2.97              | 31.6      | 106  | 0.318      | 0.400        | Pass   |

Plots showing the channel occupancy time and time between successive transmissions are contained in Appendix B of this test report. These are identical for all modulation modes.

**Average Channel Occupancy Time**

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

No. of utilised hopping channels (N) = 79

One channel occupancy time ( $T_{occ}$ ) = 2.95ms

Measurement Period (MP) = 31.6 Seconds

|                    |   |              |
|--------------------|---|--------------|
| Measurement Period | = | 0.4 x N      |
| Measurement Period | = | 0.4 x 79     |
| Measurement Period | = | 31.6 seconds |

|                                                         |   |            |
|---------------------------------------------------------|---|------------|
| No. of transmission cycles in measurement period (MPTX) | = | 31.6/PRF   |
|                                                         | = | 31.6/0.296 |
|                                                         | = | 106        |

|                              |   |                              |
|------------------------------|---|------------------------------|
| Average Occupancy Time (AOT) | = | $T_{occ} \times \text{MPTX}$ |
| Average Occupancy Time (AOT) | = | 2.97ms x 107                 |
| Average Occupancy Time (AOT) | = | 317.79ms                     |



**A8    Antenna Gain**

The maximum antenna gain for the antenna types to be used with the EUT, as declared by the client, is 2.3 dBi

**A9 Unintentional Radiated Electric Field Emissions - 15.109**

Preliminary scans were performed using a peak detector with the RBW = 100kHz. The maximum permitted field strength is listed in Section 15.109. The EUT was set to receive mode only.

The following test site was used for final measurements as specified by the standard tested to :

3m open area test site :

☐

3m alternative test site :

☒

The effect of the EUT set-up on the measurements is summarised in note (c) below.

| Test Details:            |                                                        |
|--------------------------|--------------------------------------------------------|
| Regulation               | Title 47 of the CFR: Part 15 Subpart (b) Clause 15.109 |
| Measurement standard     | ANSI C63.10:2003                                       |
| Frequency range          | 30MHz to 25GHz                                         |
| EUT sample number        | S20                                                    |
| Modification state       | 0                                                      |
| SE in test environment   | RFG464                                                 |
| SE isolated from EUT     | REF829                                                 |
| EUT set up               | Refer to Appendix C                                    |
| Temperature              | 15°C                                                   |
| Photographs (Appendix F) | Photograph 1 and 2                                     |

The worst case radiated emission measurements for spurious emissions:

| Ref No. | FREQ. (MHz) | Det. | MEAS Rx (dBµV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBµV/m) | EXTRAP FACT (dB) | FIELD ST'GH (dBµV/m) | LIMIT (dBµV/m) | Margin (dB) |
|---------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|----------------------|----------------|-------------|
| 1       | 1650.923    | Pk   | 61.2           | 5.0             | 26.4             | 33.72        | 58.9                 | 0.0              | 58.9                 | 74.0           | -15.1       |
| 2       | 1650.923    | AV   | 36.2           | 5.0             | 26.4             | 33.72        | 33.9                 | 0.0              | 33.9                 | 54.0           | -20.1       |

The effect of the EUT set-up on the measurements is summarised in note (c) below.

| Test Details:            |                                                        |
|--------------------------|--------------------------------------------------------|
| Regulation               | Title 47 of the CFR: Part 15 Subpart (b) Clause 15.109 |
| Measurement standard     | ANSI C63.10:2003                                       |
| Frequency range          | 30MHz to 25GHz                                         |
| EUT sample number        | S21                                                    |
| Modification state       | 0                                                      |
| SE in test environment   | RFG464                                                 |
| SE isolated from EUT     | REF829                                                 |
| EUT set up               | Refer to Appendix C                                    |
| Temperature              | 15°C                                                   |
| Photographs (Appendix F) | Photograph 3 and 4                                     |

The worst case radiated emission measurements for spurious emissions:

| Ref No. | FREQ. (MHz) | Det. | MEAS Rx (dBµV) | CABLE LOSS (dB) | ANT FACT. (dB/m) | PRE AMP (dB) | FIELD ST'GH (dBµV/m) | EXTRAP FACT (dB) | FIELD ST'GH (dBµV/m) | LIMIT (dBµV/m) | Margin (dB) |
|---------|-------------|------|----------------|-----------------|------------------|--------------|----------------------|------------------|----------------------|----------------|-------------|
| 1       | 1618.166    | Pk   | 57.3           | -2.8            | 26.5             | 33.73        | 47.3                 | -9.5             | 37.8                 | 74.0           | -36.2       |
| 2       | 1618.166    | AV   | 31.9           | -2.8            | 26.5             | 33.73        | 21.9                 | -9.5             | 12.4                 | 54.0           | -41.6       |

**A10 Power Line Conducted Emissions**

Preview power line conducted emission measurements were performed with a peak detector in a screened room. The effect of the EUT set-up on the measurements is summarised in note (b).

Where applicable formal measurements of the emissions were performed with a peak, average and/or quasi peak detector. The EUT was set to transmit on its lowest, centre and highest carrier frequency in turn. The formal measurements are detailed below:

| Test Details: Transmit Mode |                                                        |
|-----------------------------|--------------------------------------------------------|
| Regulation                  | Title 47 of the CFR: Part 15 Subpart (c) Clause 15.207 |
| Measurement standard        | ANSI C63.10                                            |
| Frequency range             | 150kHz to 30MHz                                        |
| EUT sample number           | S21                                                    |
| Modification state          | 0                                                      |
| SE in test environment      | RFG464                                                 |
| SE isolated from EUT        | REF829                                                 |
| EUT set up                  | Refer to Appendix C                                    |
| Photographs (Appendix F)    | Photograph 3                                           |

The worst-case power line conducted emission measurements are listed below:

**Results measured using the average detector compared to the average limit**

| Ref No. | Freq (MHz) | Conductor | Result (dBuV) | Spec Limit (dBuV) | Margin (dB) | Result Summary |
|---------|------------|-----------|---------------|-------------------|-------------|----------------|
| 1       | 0.150      | L1        | 4.0           | 56.0              | -52.0       | Pass           |
| 2       | 2.000      | L1        | 2.4           | 46.0              | -43.6       | Pass           |
| 3       | 5.000      | L1        | 2.6           | 50.0              | -47.4       | Pass           |
| 4       | 10.000     | L1        | 3.7           | 50.0              | -46.3       | Pass           |
| 5       | 20.000     | L1        | 6.6           | 50.0              | -43.4       | Pass           |
| 6       | 30.000     | L1        | 6.5           | 50.0              | -43.5       | Pass           |
| 7       | 0.150      | N         | 3.0           | 56.0              | -53.0       | Pass           |
| 8       | 2.000      | N         | 2.4           | 46.0              | -43.6       | Pass           |
| 9       | 5.000      | N         | 2.7           | 50.0              | -47.3       | Pass           |
| 10      | 10.000     | N         | 4.2           | 50.0              | -45.8       | Pass           |
| 11      | 20.000     | N         | 7.7           | 50.0              | -42.3       | Pass           |
| 12      | 30.000     | N         | 6.0           | 50.0              | -44.0       | Pass           |

**Results measured using the quasi-peak detector compared to the quasi-peak limit**

| Ref No. | Freq (MHz) | Conductor | Result (dBuV) | Spec Limit (dBuV) | Margin (dB) | Result Summary |
|---------|------------|-----------|---------------|-------------------|-------------|----------------|
| 1       | 0.150      | L1        | 8.2           | 66.0              | -57.8       | Pass           |
| 2       | 2.000      | L1        | 7.8           | 56.0              | -48.2       | Pass           |
| 3       | 5.000      | L1        | 7.7           | 60.0              | -52.3       | Pass           |
| 4       | 10.000     | L1        | 8.5           | 60.0              | -51.5       | Pass           |
| 5       | 20.000     | L1        | 10.9          | 60.0              | -49.1       | Pass           |
| 6       | 30.000     | L1        | 11.5          | 60.0              | -48.5       | Pass           |
| 7       | 0.150      | N         | 7.7           | 56.0              | -48.3       | Pass           |
| 8       | 2.000      | N         | 7.6           | 50.0              | -42.4       | Pass           |
| 9       | 5.000      | N         | 7.6           | 60.0              | -52.4       | Pass           |
| 10      | 10.000     | N         | 8.6           | 60.0              | -51.4       | Pass           |
| 11      | 20.000     | N         | 11.8          | 60.0              | -48.2       | Pass           |
| 12      | 30.000     | N         | 11.2          | 60.0              | -48.8       | Pass           |

Preview power line conducted emission measurements were performed with a peak detector in a screened room. The effect of the EUT set-up on the measurements is summarised in note (b).

Where applicable formal measurements of the emissions were performed with a peak, average and/or quasi peak detector. The EUT was set to not transmit. The formal measurements are detailed below:

| Test Details: Receive Mode |                                                        |
|----------------------------|--------------------------------------------------------|
| Regulation                 | Title 47 of the CFR: Part 15 Subpart (c) Clause 15.107 |
| Measurement standard       | ANSI C63.10                                            |
| Frequency range            | 150kHz to 30MHz                                        |
| EUT sample number          | S21                                                    |
| Modification state         | 0                                                      |
| SE in test environment     | RFG464                                                 |
| SE isolated from EUT       | REF829                                                 |
| EUT set up                 | Refer to Appendix C                                    |
| Photographs (Appendix F)   | Photograph 3                                           |

The worst-case power line conducted emission measurements are listed below:

**Results measured using the average detector compared to the average limit**

| Ref No. | Freq (MHz) | Conductor | Result (dBuV) | Spec Limit (dBuV) | Margin (dB) | Result Summary |
|---------|------------|-----------|---------------|-------------------|-------------|----------------|
| 1       | 0.150      | L1        | 2.0           | 56.0              | -54.0       | Pass           |
| 2       | 2.000      | L1        | 2.9           | 46.0              | -43.1       | Pass           |
| 3       | 5.000      | L1        | 2.6           | 50.0              | -47.4       | Pass           |
| 4       | 10.000     | L1        | 3.8           | 50.0              | -46.2       | Pass           |
| 5       | 20.000     | L1        | 6.6           | 50.0              | -43.4       | Pass           |
| 6       | 30.000     | L1        | 6.3           | 50.0              | -43.7       | Pass           |
| 7       | 0.150      | N         | 3.1           | 56.0              | -52.9       | Pass           |
| 8       | 2.000      | N         | 2.2           | 46.0              | -43.8       | Pass           |
| 9       | 5.000      | N         | 2.5           | 50.0              | -47.5       | Pass           |
| 10      | 10.000     | N         | 4.5           | 50.0              | -45.5       | Pass           |
| 11      | 20.000     | N         | 6.9           | 50.0              | -43.1       | Pass           |
| 12      | 30.000     | N         | 5.0           | 50.0              | -45.0       | Pass           |

**Results measured using the quasi-peak detector compared to the quasi-peak limit**

| Ref No. | Freq (MHz) | Conductor | Result (dBuV) | Spec Limit (dBuV) | Margin (dB) | Result Summary |
|---------|------------|-----------|---------------|-------------------|-------------|----------------|
| 1       | 0.150      | L1        | 7.7           | 66.0              | -58.3       | Pass           |
| 2       | 2.000      | L1        | 8.1           | 56.0              | -47.9       | Pass           |
| 3       | 5.000      | L1        | 7.1           | 60.0              | -52.9       | Pass           |
| 4       | 10.000     | L1        | 8.0           | 60.0              | -52.0       | Pass           |
| 5       | 20.000     | L1        | 11.0          | 60.0              | -49.0       | Pass           |
| 6       | 30.000     | L1        | 11.2          | 60.0              | -48.8       | Pass           |
| 7       | 0.150      | N         | 7.9           | 56.0              | -48.1       | Pass           |
| 8       | 2.000      | N         | 7.2           | 50.0              | -42.8       | Pass           |
| 9       | 5.000      | N         | 7.6           | 60.0              | -52.4       | Pass           |
| 10      | 10.000     | N         | 8.7           | 60.0              | -51.3       | Pass           |
| 11      | 20.000     | N         | 11.0          | 60.0              | -49.0       | Pass           |
| 12      | 30.000     | N         | 10.2          | 60.0              | -49.8       | Pass           |

**Specification limits :**

Conducted emission limits (47 CFR 15: Clause 15.207):

Conducted disturbance at the mains ports.

| Frequency range MHz | Limits dB $\mu$ V     |                       |
|---------------------|-----------------------|-----------------------|
|                     | Quasi-peak            | Average               |
| 0.15 to 0.5         | 66 to 56 <sup>2</sup> | 56 to 46 <sup>2</sup> |
| 0.5 to 5            | 56                    | 46                    |
| 5 to 30             | 60                    | 50                    |

Notes:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

Notes:

- (a) The levels may have been rounded for display purposes.
- (b) The following table summarises the effect of the EUT operating mode and internal configuration on the measured emission levels :

|                                                         | See (i) | See (ii) | See (iii) | See (iv) |
|---------------------------------------------------------|---------|----------|-----------|----------|
| Effect of EUT operating mode on emission levels         | ✓       | ✓        | ✓         | ✓        |
| Effect of EUT internal configuration on emission levels | ✓       | ✓        | ✓         | ✓        |

(i) Parameter defined by standard and / or single possible, refer to Appendix C  
(ii) Parameter defined by client and / or single possible, refer to Appendix C  
(iii) Parameter had a negligible effect on emission levels, refer to Appendix C  
(iv) Worst case determined by initial measurement, refer to Appendix C



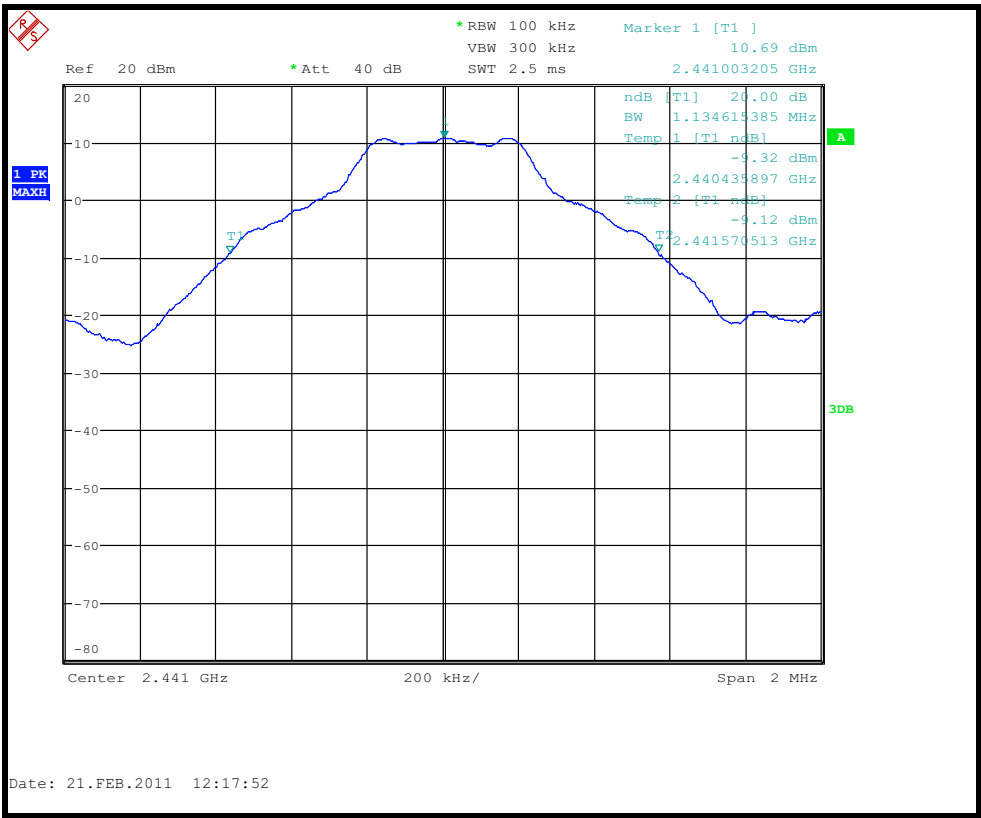
## **Appendix B:**

## **Supporting Graphical Data**

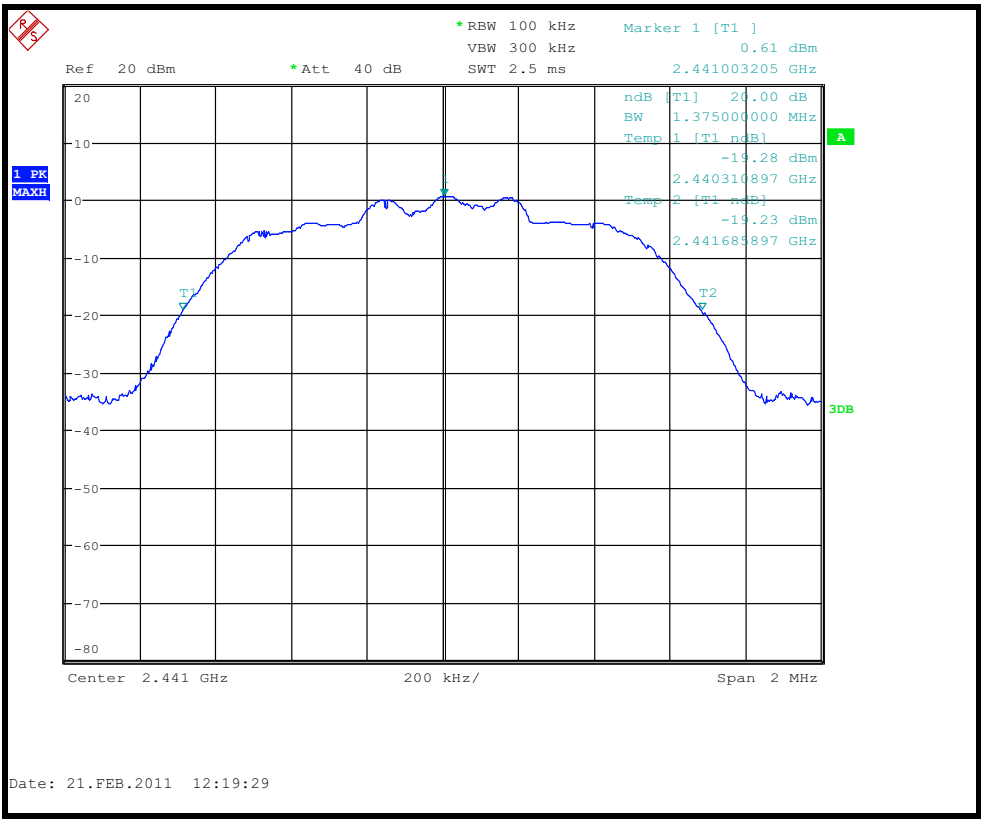
This appendix contains graphical data obtained during testing.

Notes:

- (a) The radiated electric field emissions and conducted emissions graphical data in this appendix is preview data. For details of formal results, refer to Appendix A and Appendix B.
- (b) The time and date on the plots do not necessarily equate to the time of the test.
- (c) Where relevant, on power line conducted emission plots, the limit displayed is the average limit, which is stricter than the quasi peak limit.
- (d) Appendix C details the numbering system used to identify the sample and its modification state.
- (e) The plots presented in this appendix may not be a complete record of the measurements performed, but are a representative sample, relative to the final assessment.



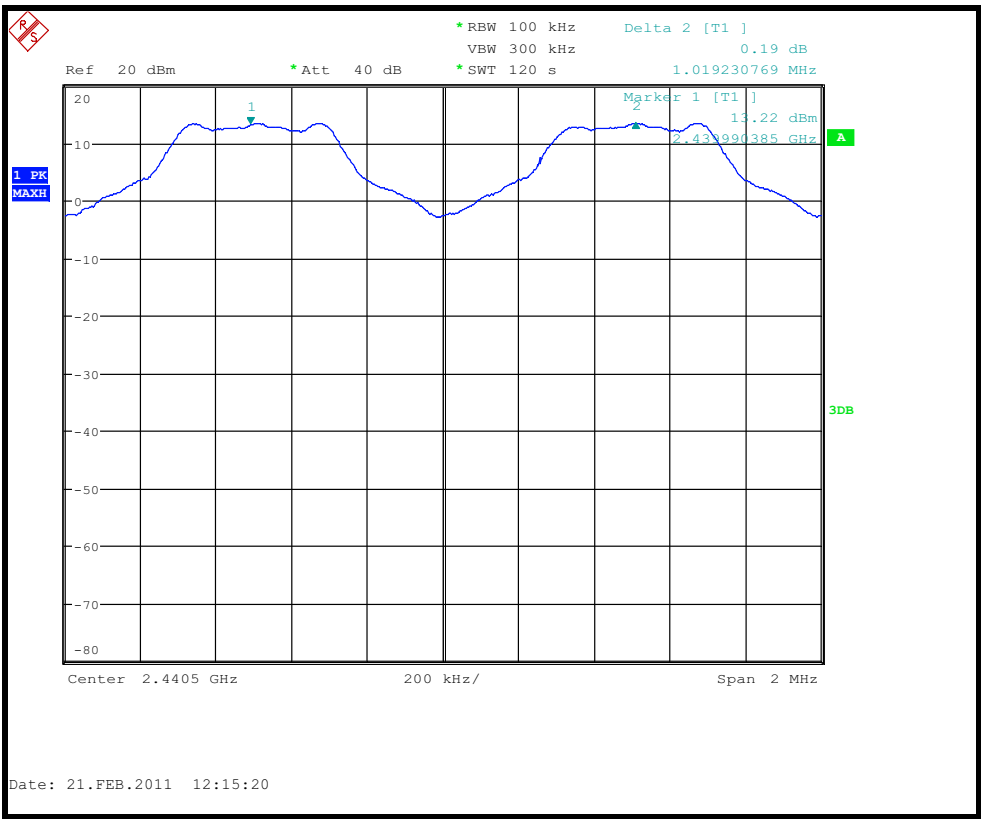
20dB Bandwidth – 1Mbps



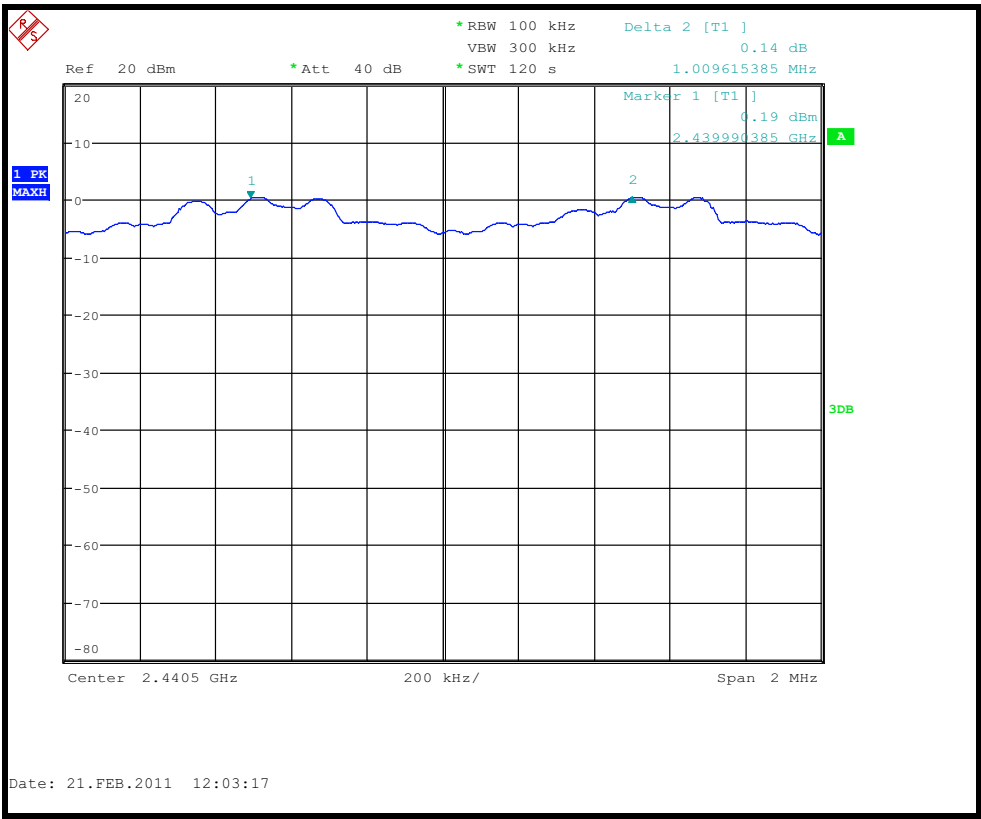
20dB Bandwidth – 2Mbps



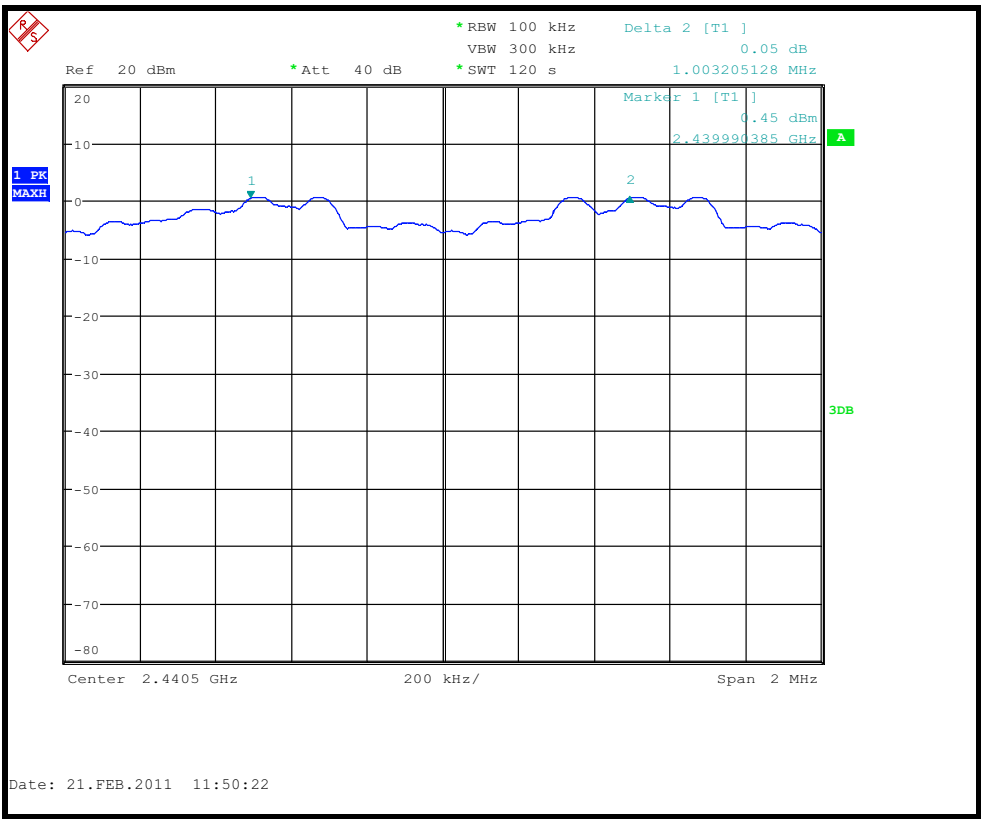
20dB Bandwidth – 3Mbps



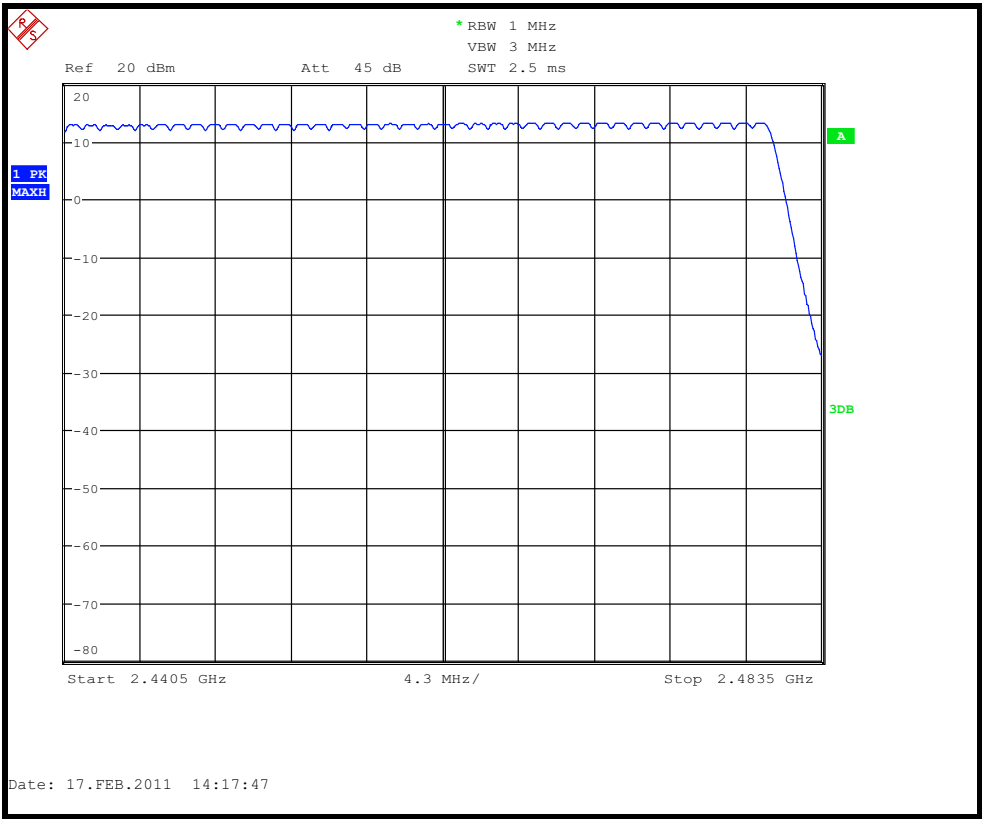
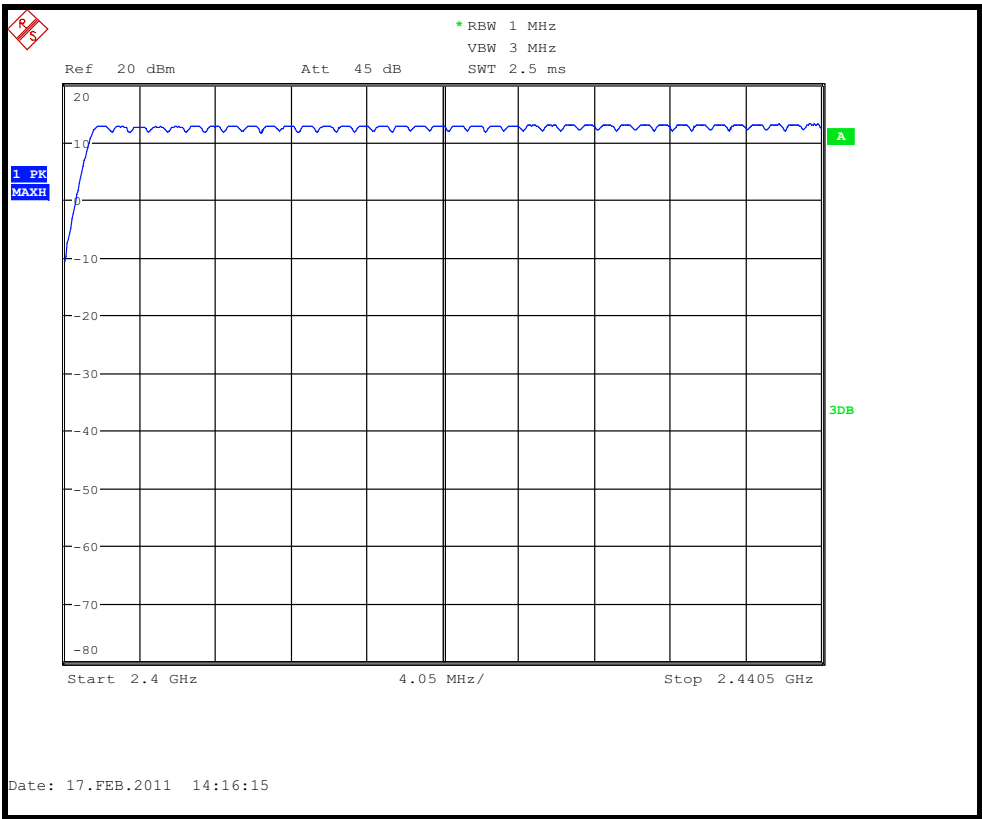
Channel Spacing – 1Mbps



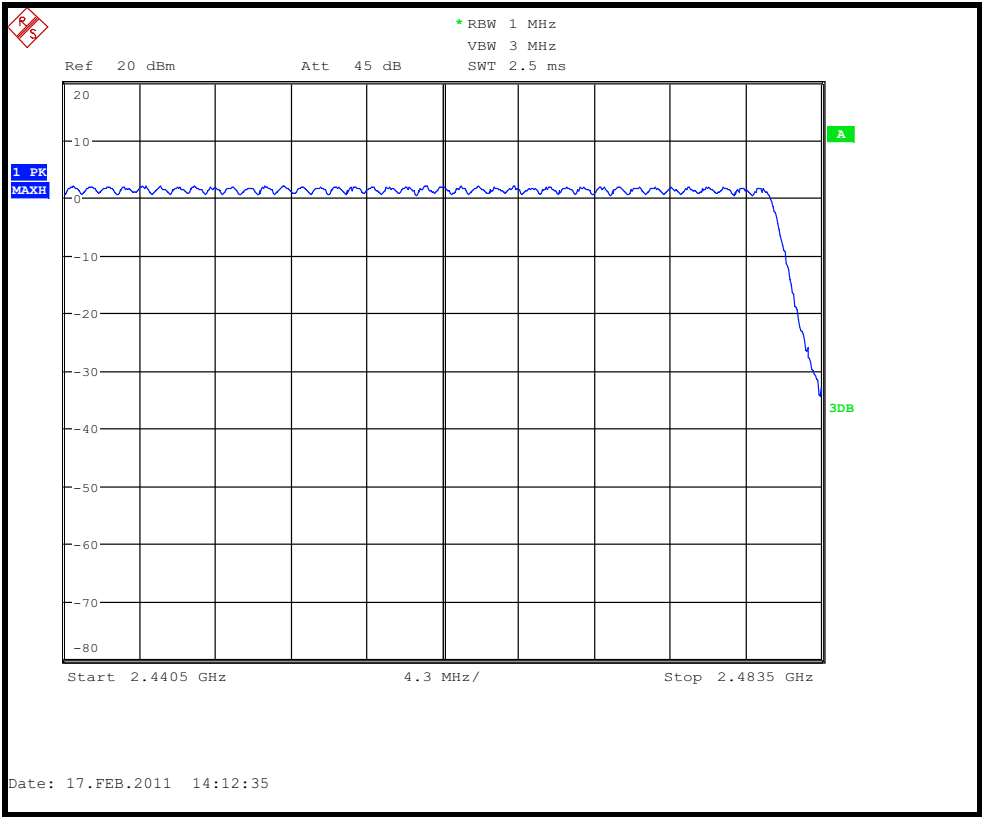
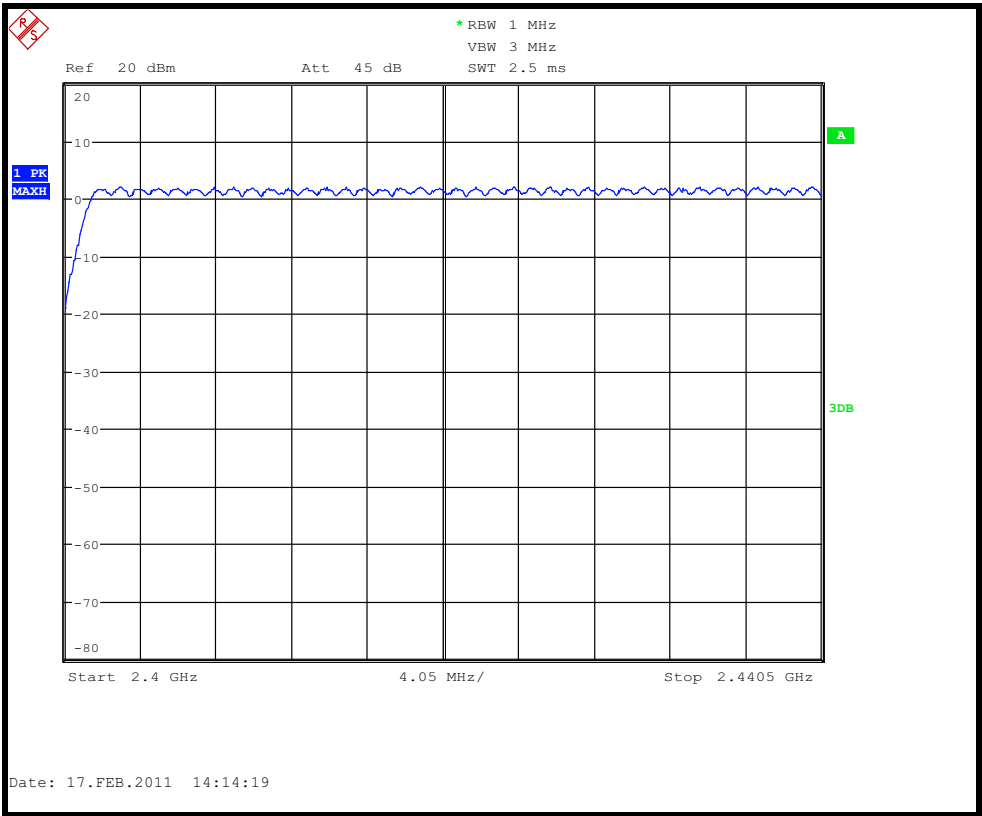
Channel Spacing – 2Mbps



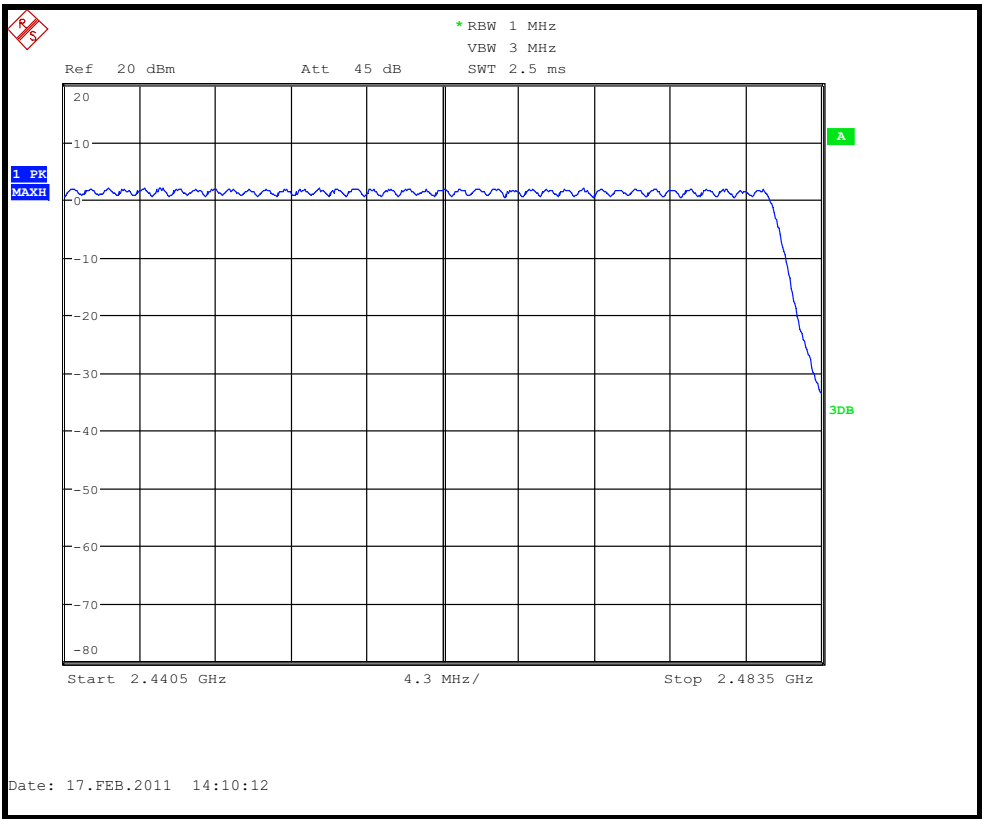
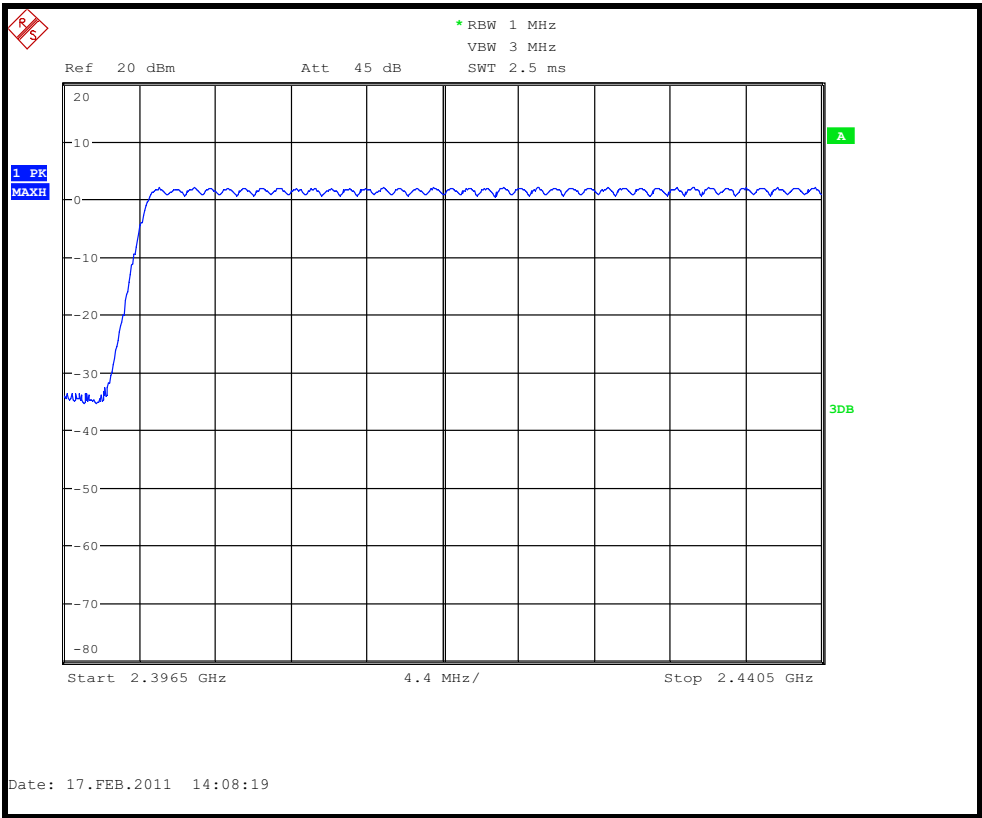
Channel Spacing – 3Mbps



Number of Hopping Channels – 1Mbps

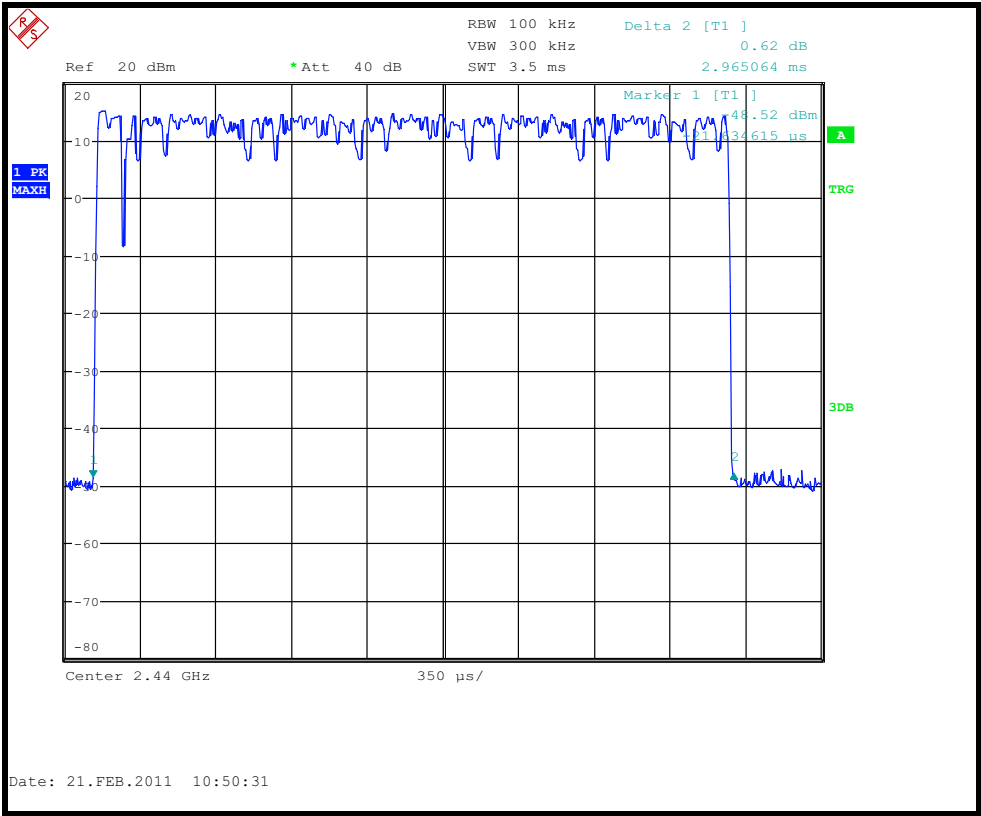


Number of Hopping Channels – 2Mbps

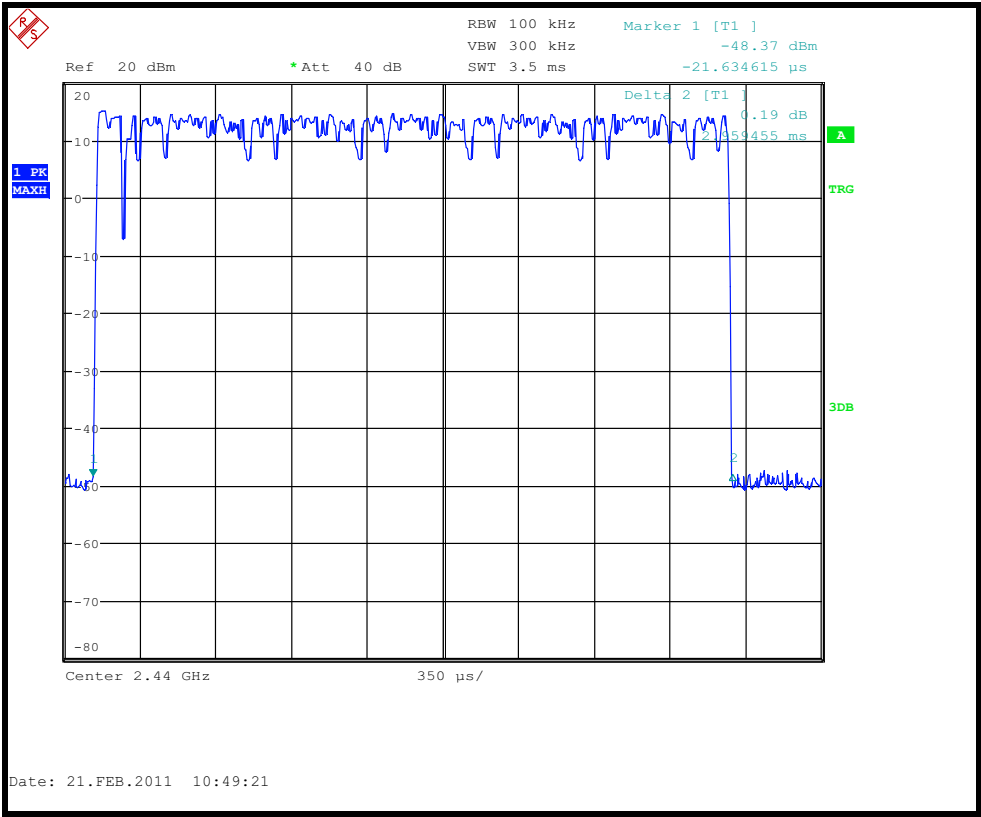


Number of Hopping Channels – 3Mbps

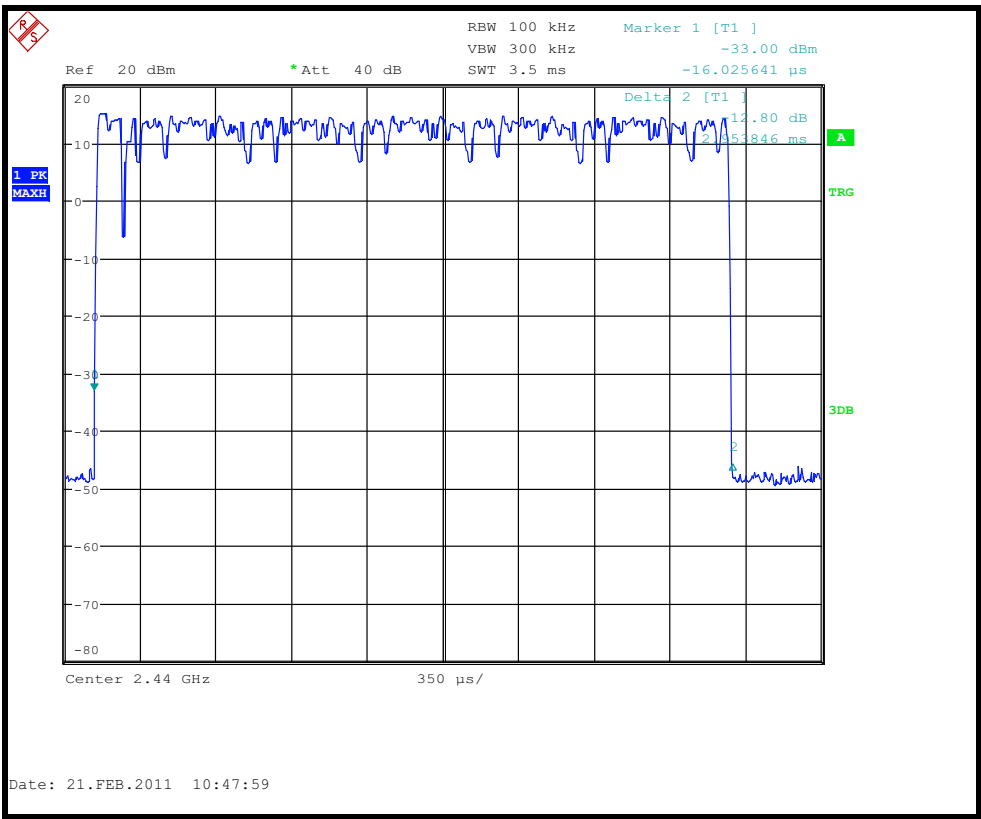




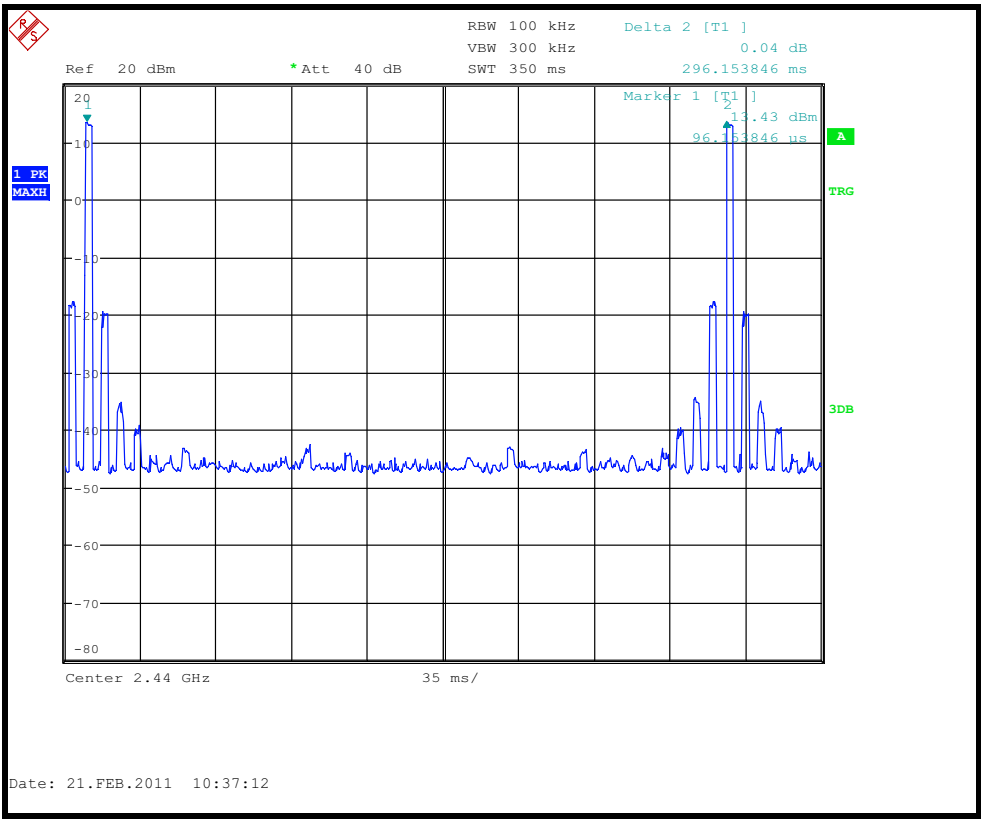
Channel Occupancy Time – 1Mbps



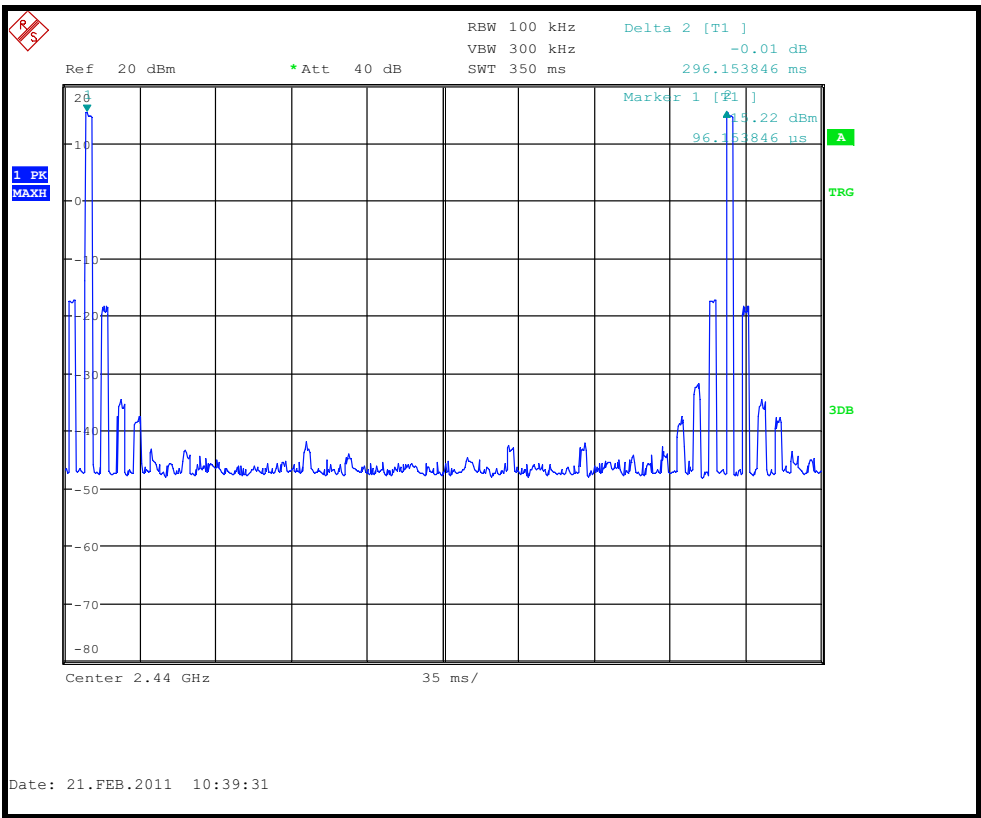
Channel Occupancy Time – 2Mbps



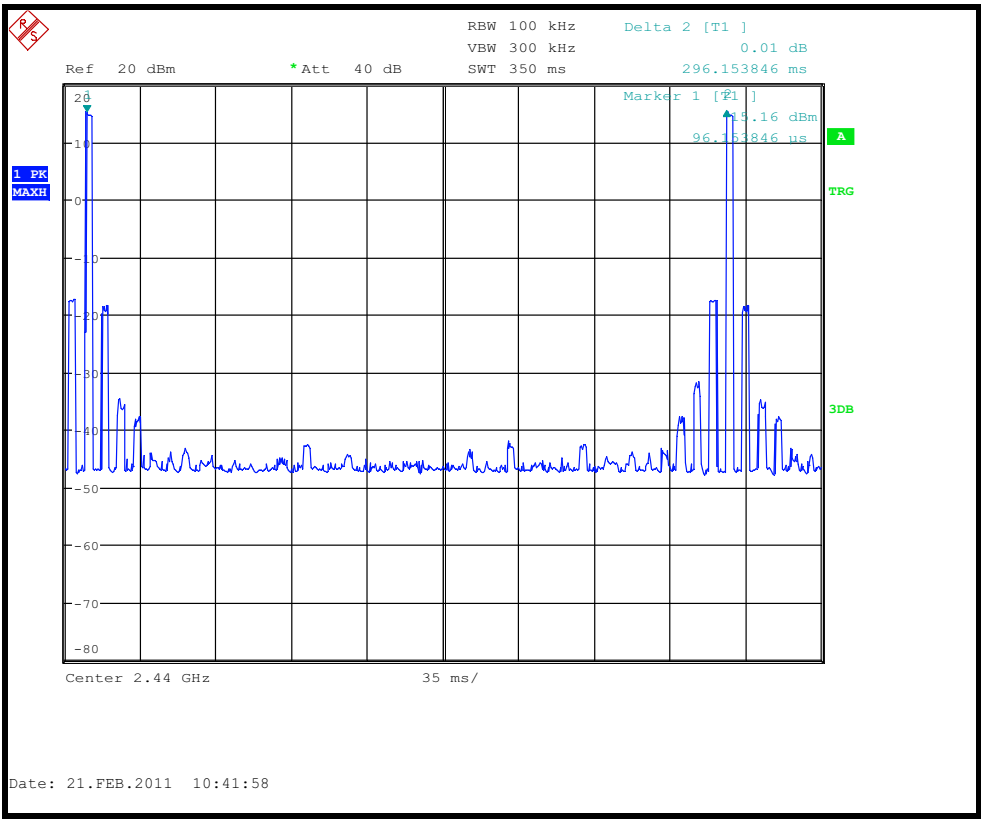
Channel Occupancy Time – 3Mbps



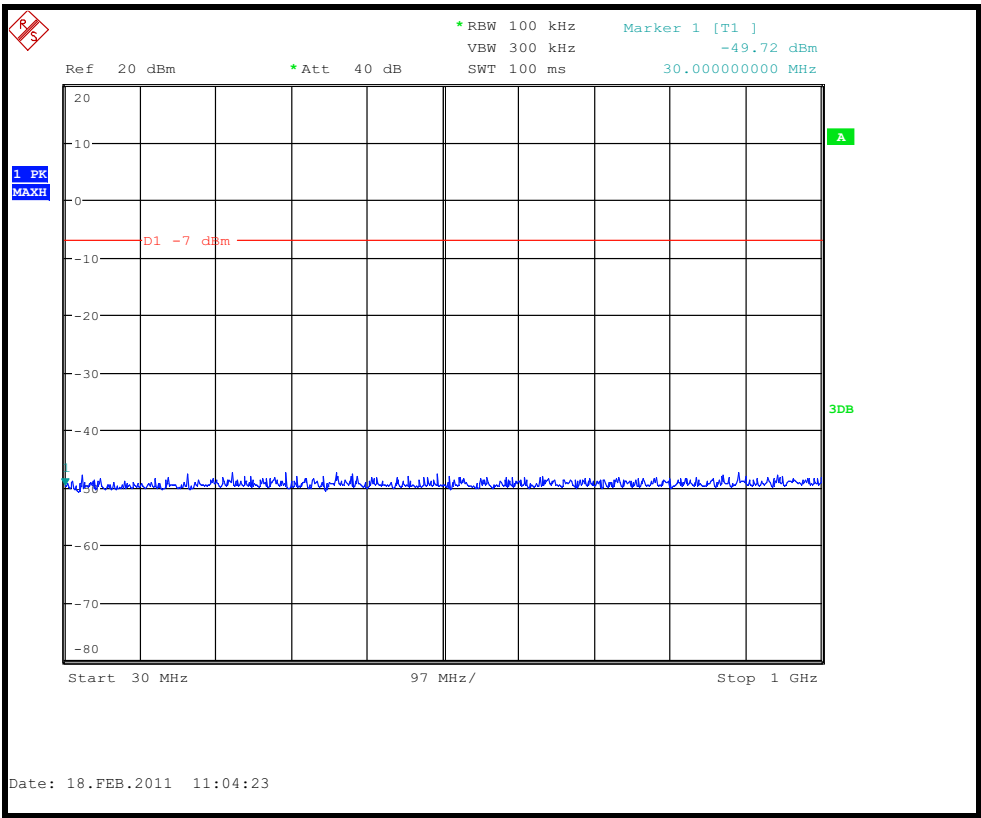
Channel repetition time – 1Mbps



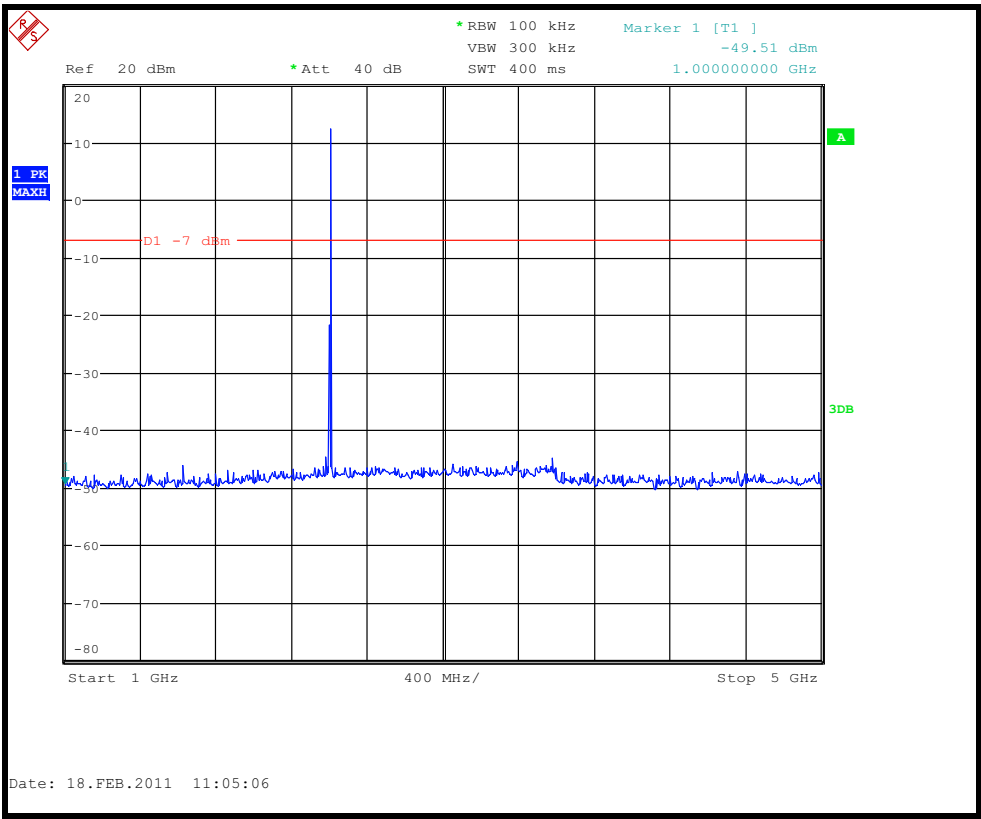
Channel repetition time – 1Mbps



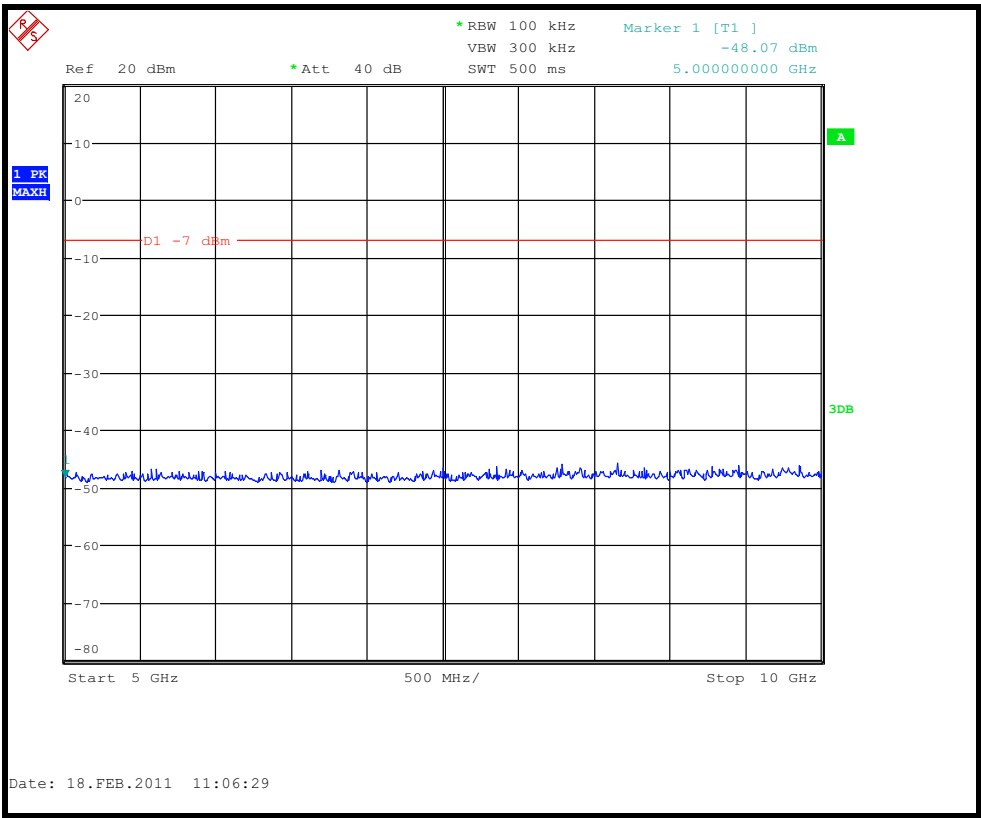
Channel repetition time – 1Mbps



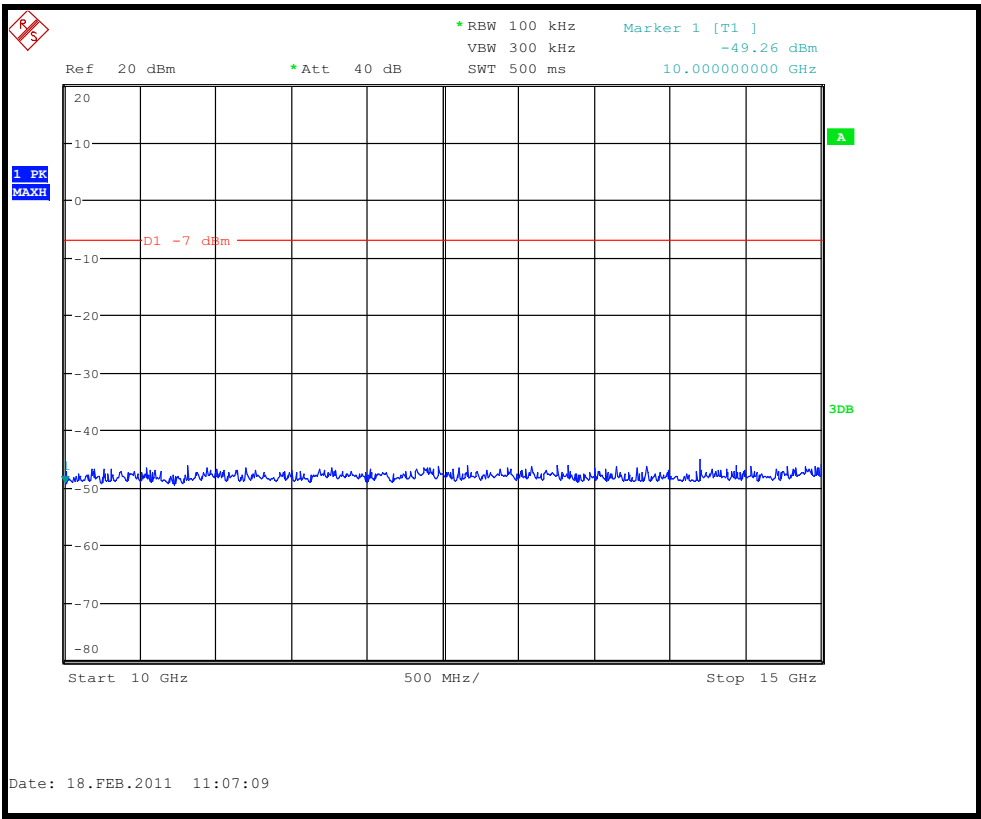
Conducted spurious emissions 30 MHz to 1 GHz – 2402.0MHz – 1Mbps



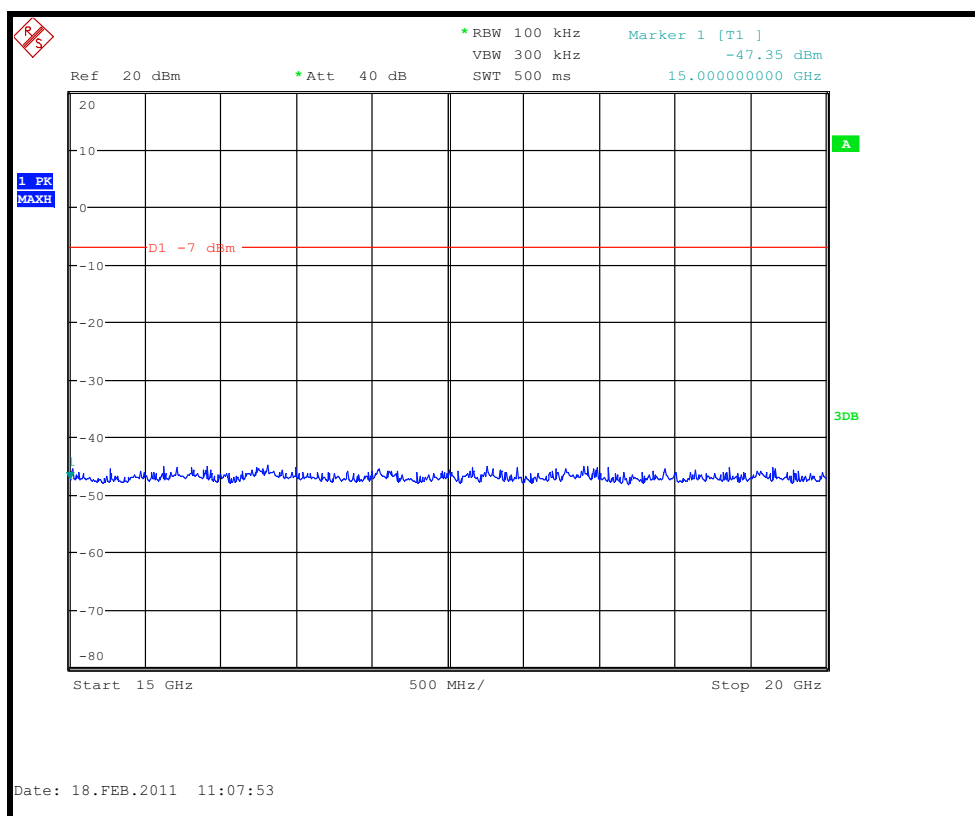
Conducted spurious emissions 1 GHz to 5 GHz – 2402.0MHz – 1Mbps



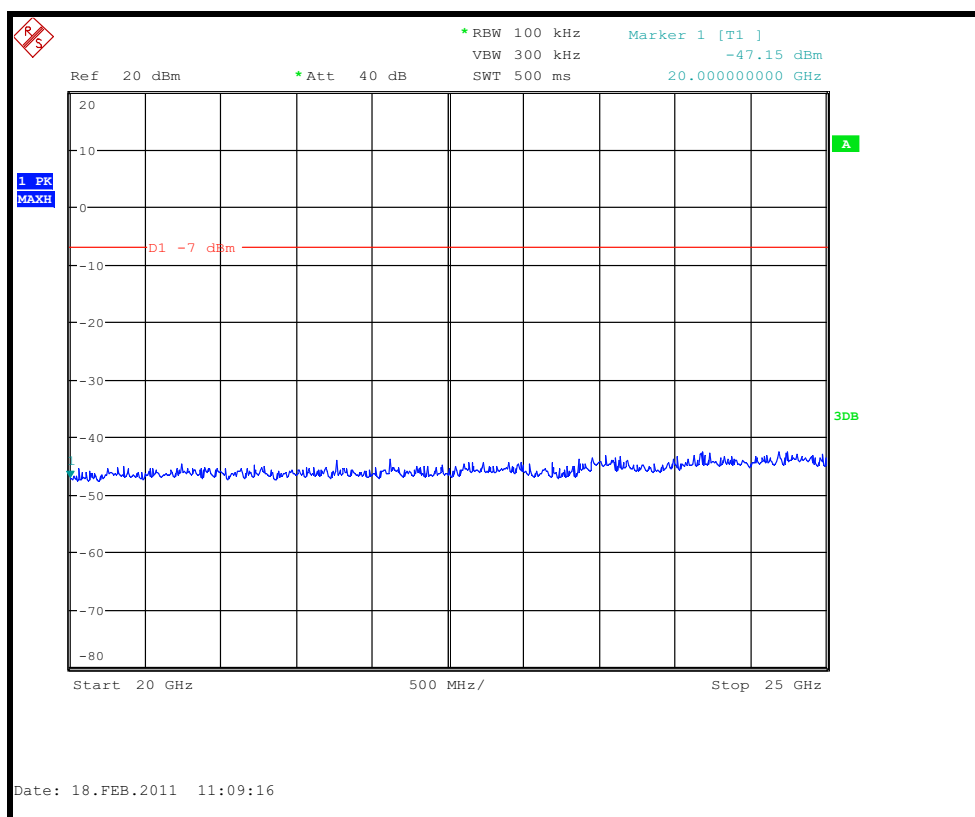
Conducted spurious emissions 5 GHz to 10 GHz – 2402.0MHz – 1Mbps



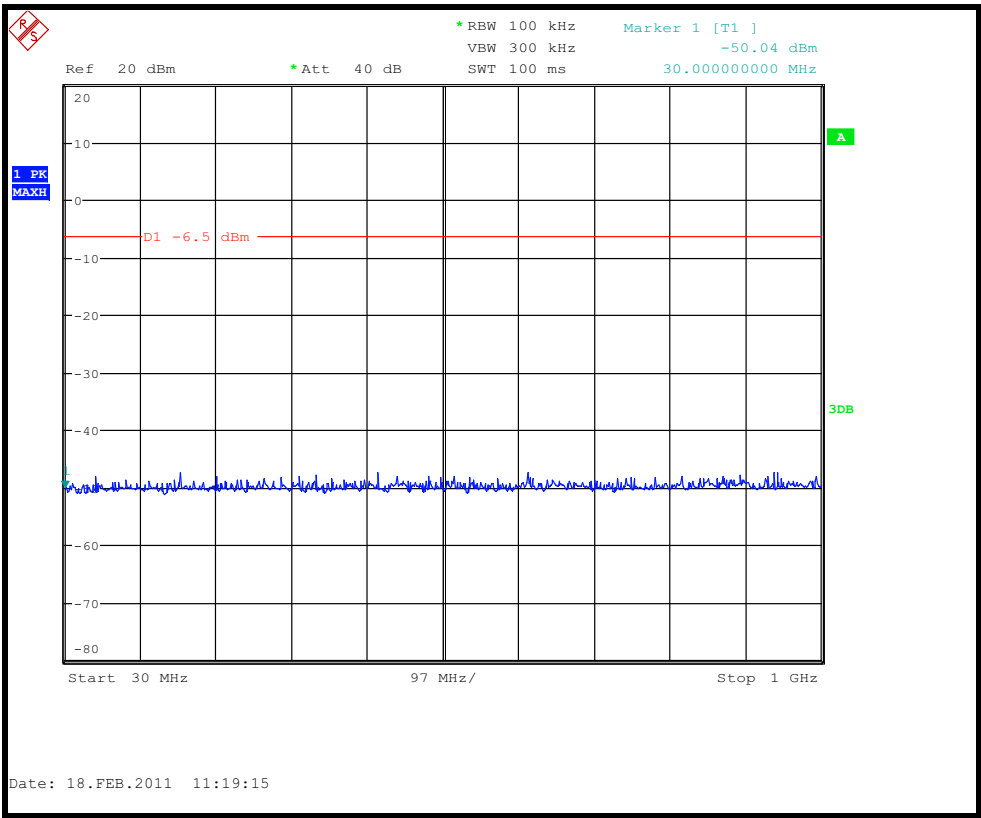
Conducted spurious emissions 10 GHz to 15 GHz – 2402.0MHz – 1Mbps



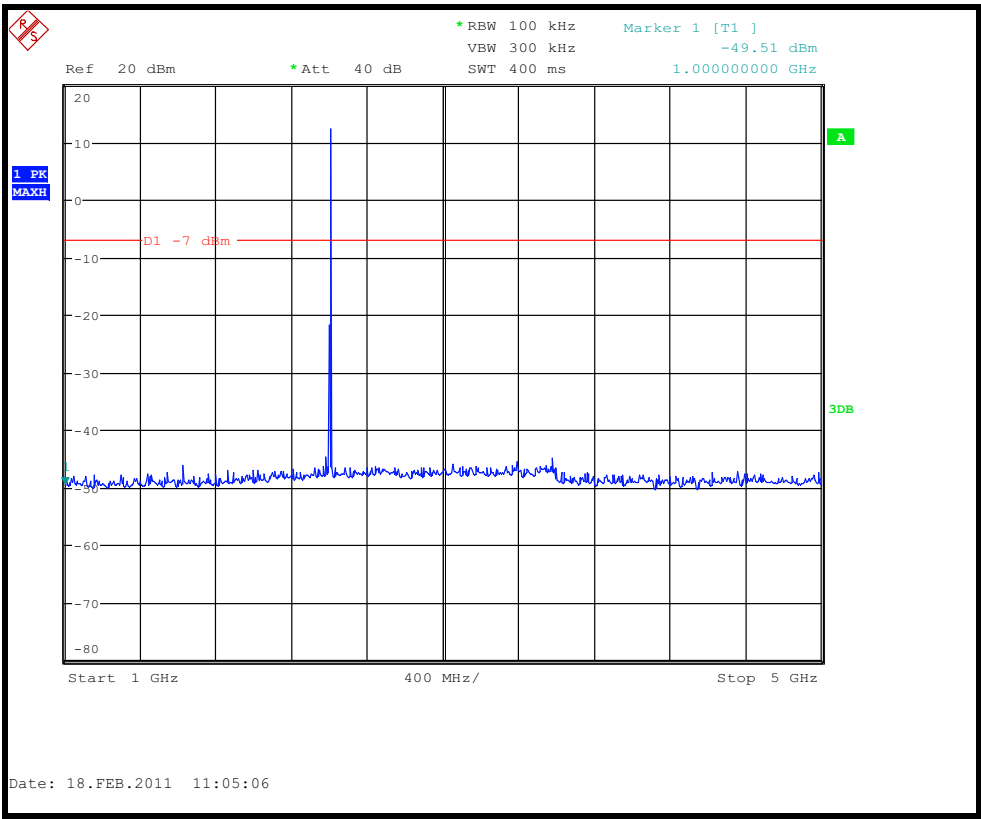
Conducted spurious emissions 15 GHz to 20 GHz – 2402.0MHz – 1Mbps



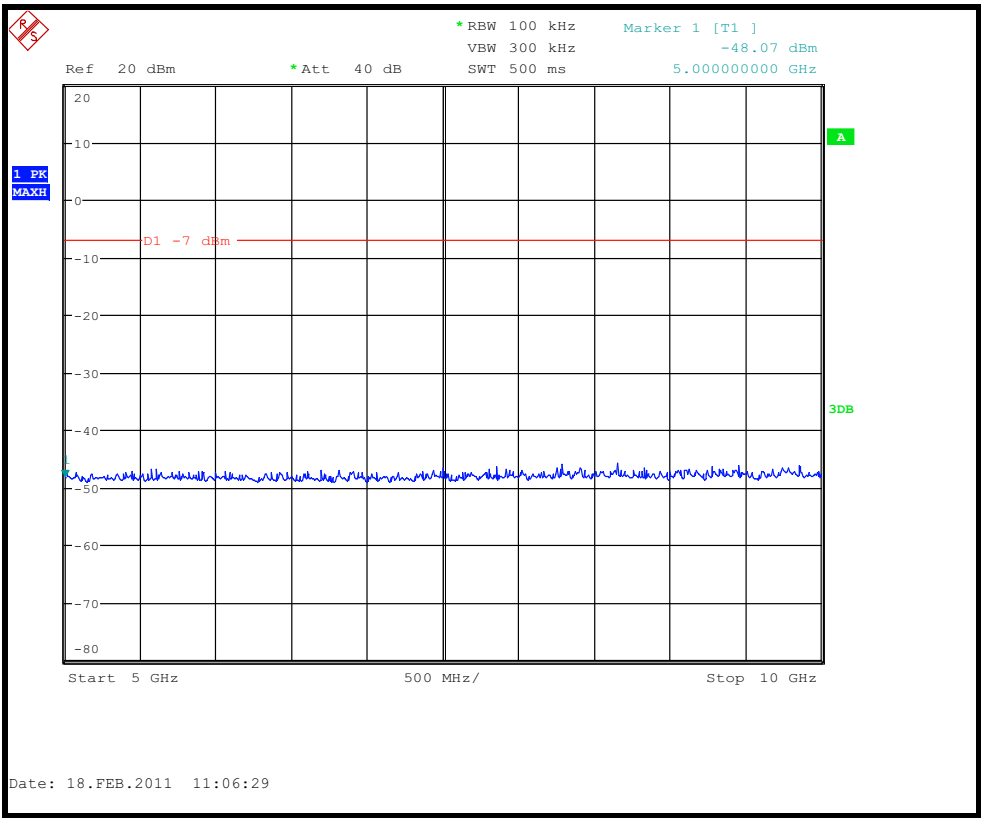
Conducted spurious emissions 20 GHz to 25 GHz – 2402.0MHz 1Mbps



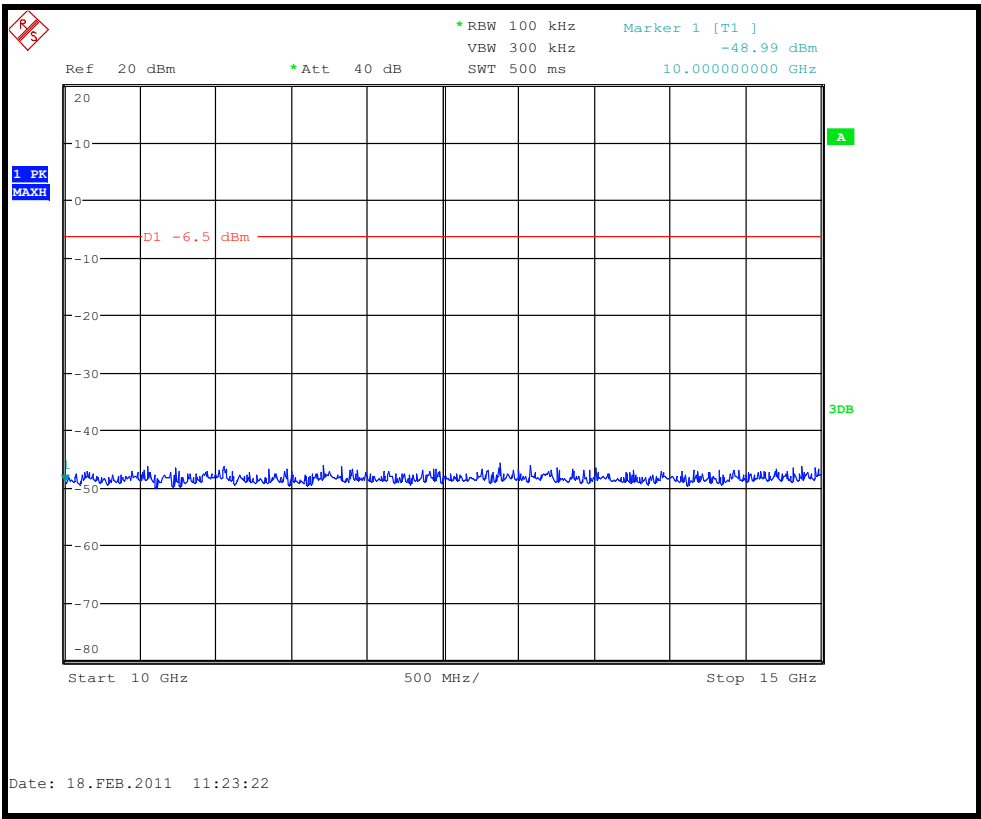
Conducted Spurious emissions 30 MHz to 1 GHz – 2441.0 MHz – 1Mbps



Conducted Spurious emissions 1 GHz to 5 GHz – 2441.0 MHz – 1Mbps

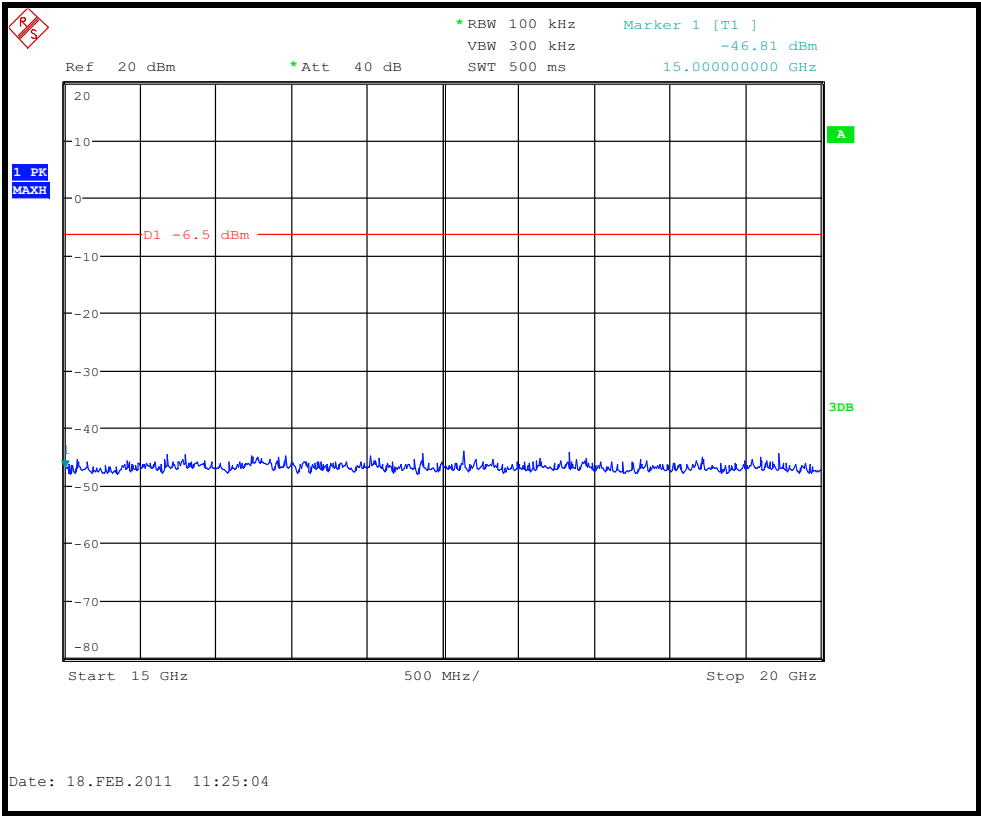


Conducted Spurious emissions 5 GHz to 10 GHz – 2441.0 MHz – 1Mbps

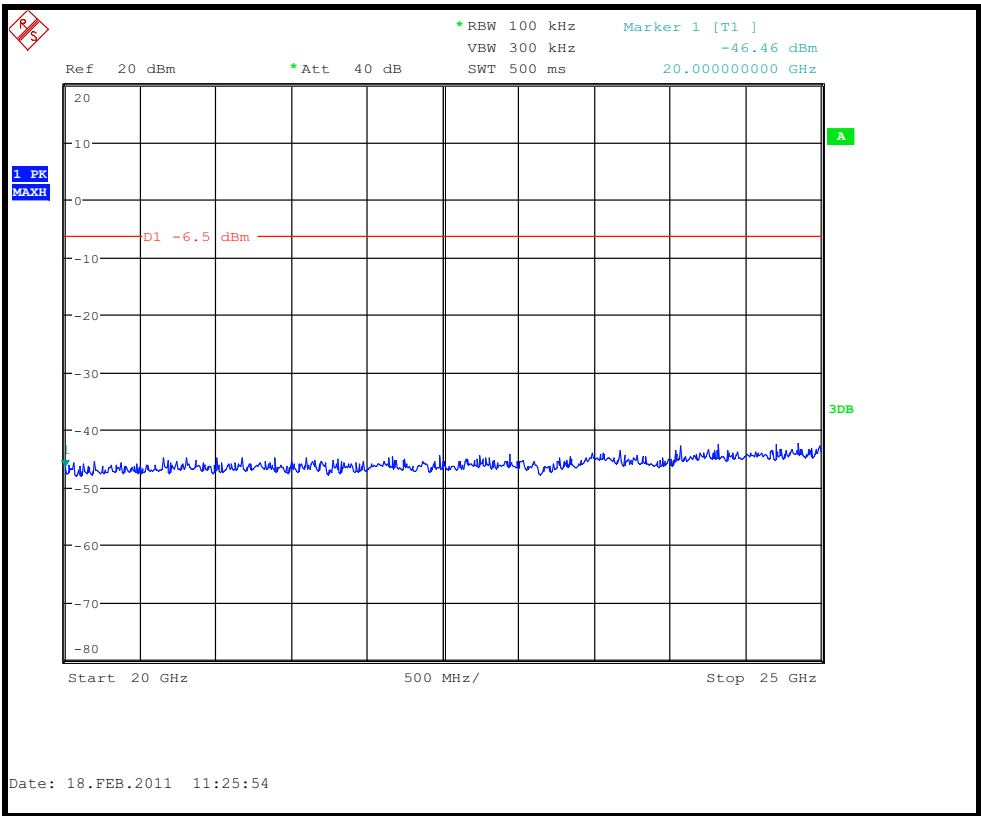


Conducted Spurious emissions 10 GHz to 15GHz – 2441.0 MHz – 1Mbps

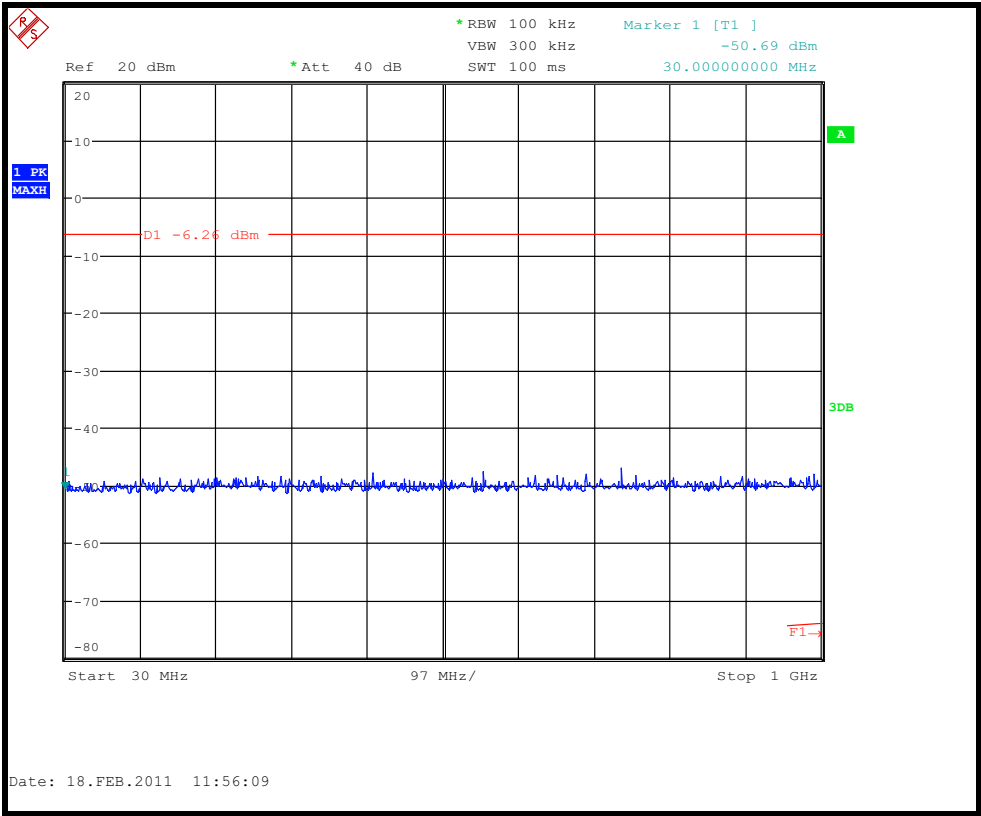




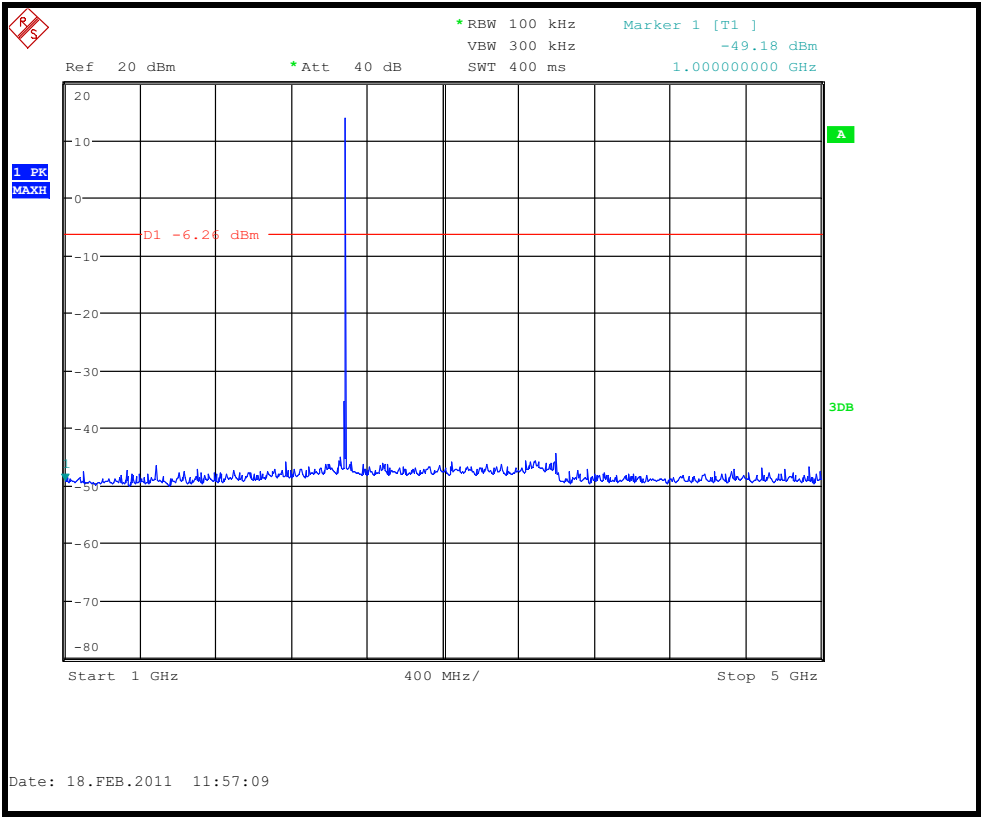
Conducted Spurious emissions 15 GHz to 20GHz – 2441.0 MHz – 1Mbps



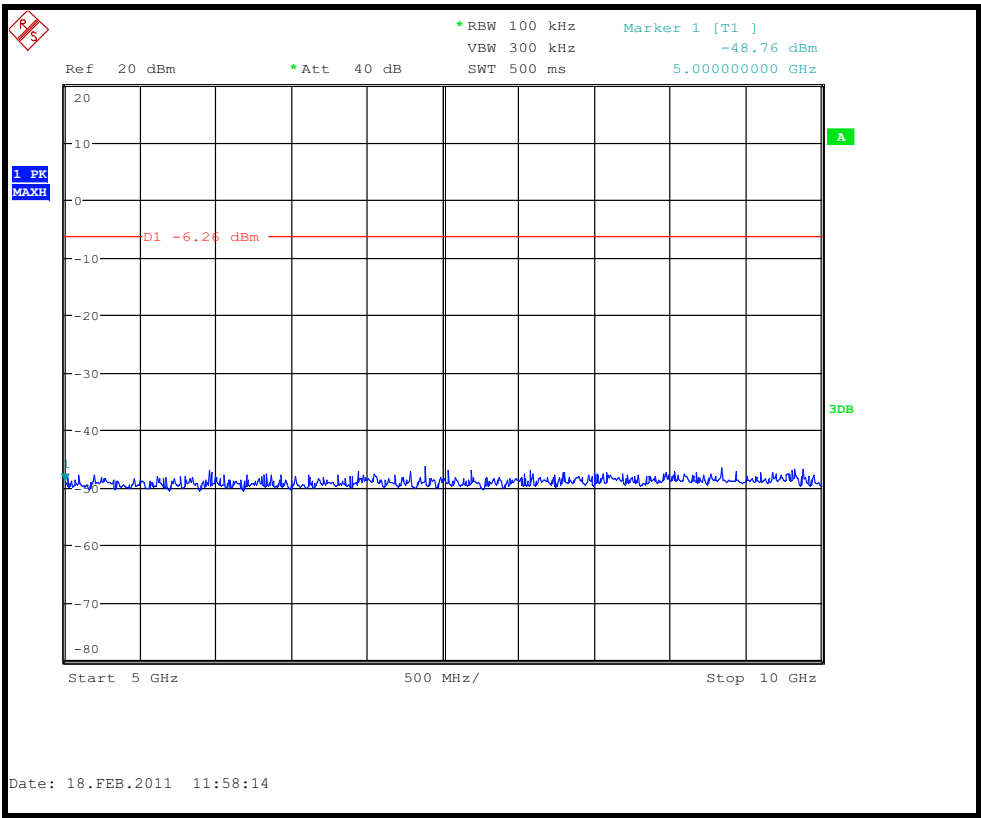
Conducted Spurious emissions 20 GHz to 25GHz – 2441.0 MHz – 1Mbps



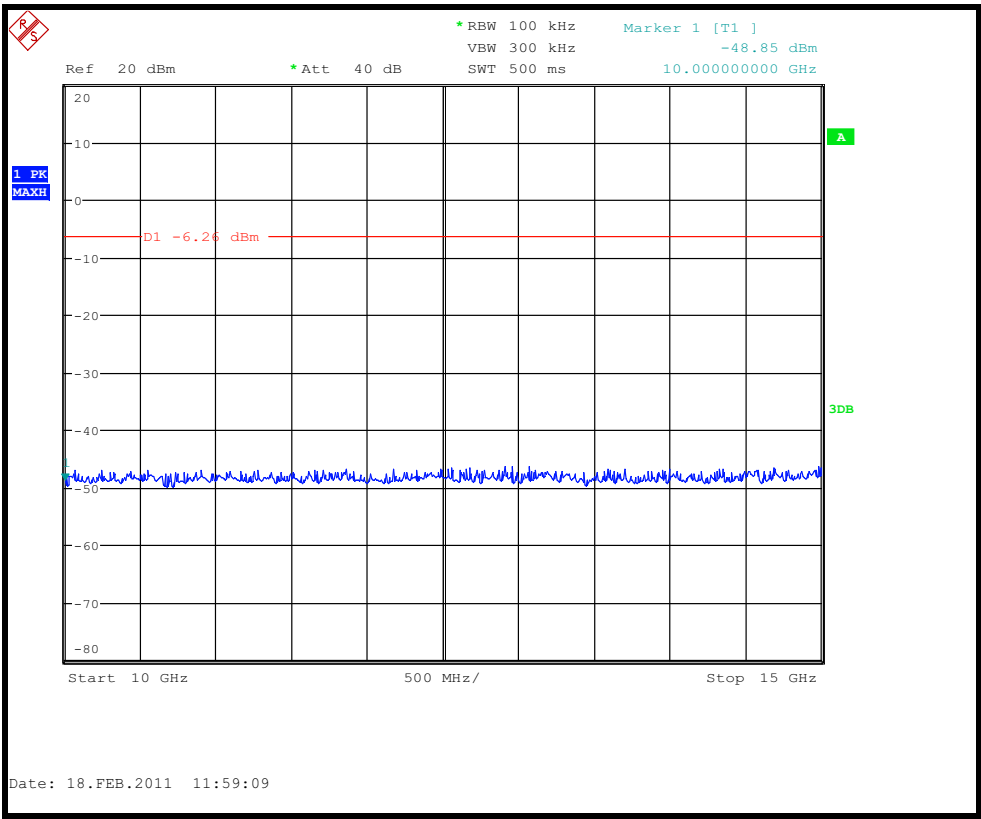
Conducted Spurious emissions 30 MHz to 1 GHz – 2480.0MHz – 1Mbps



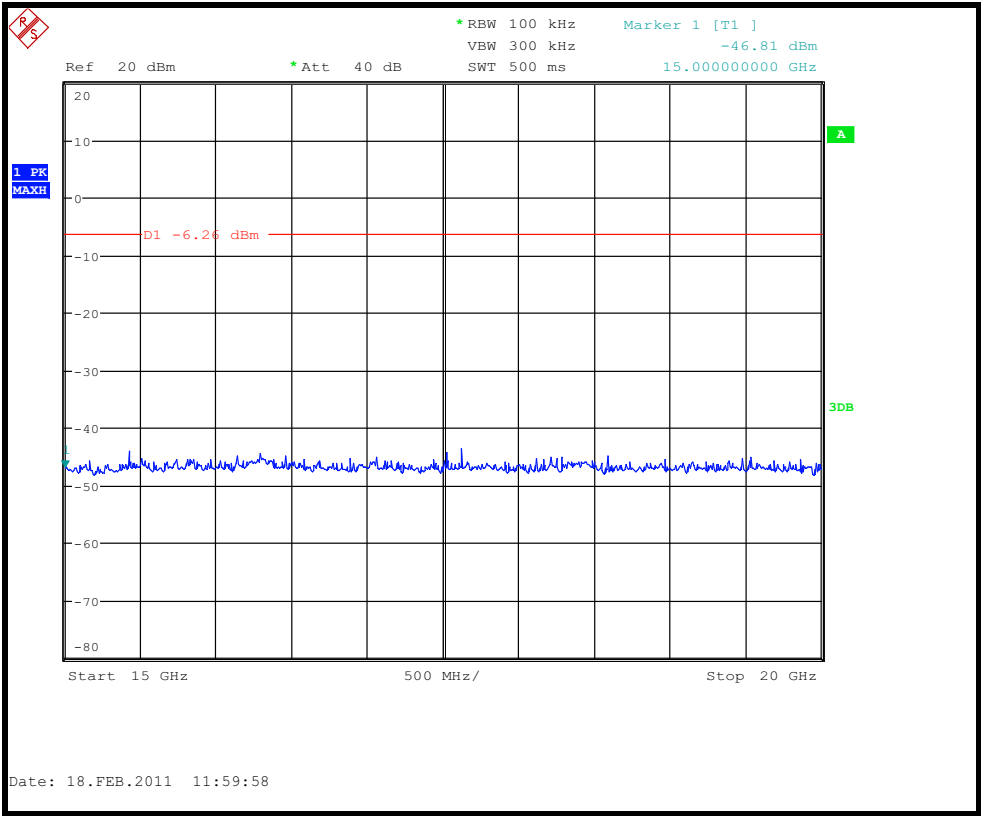
Conducted Spurious emissions 1 GHz to 5 GHz – 2480.0MHz – 1Mbps



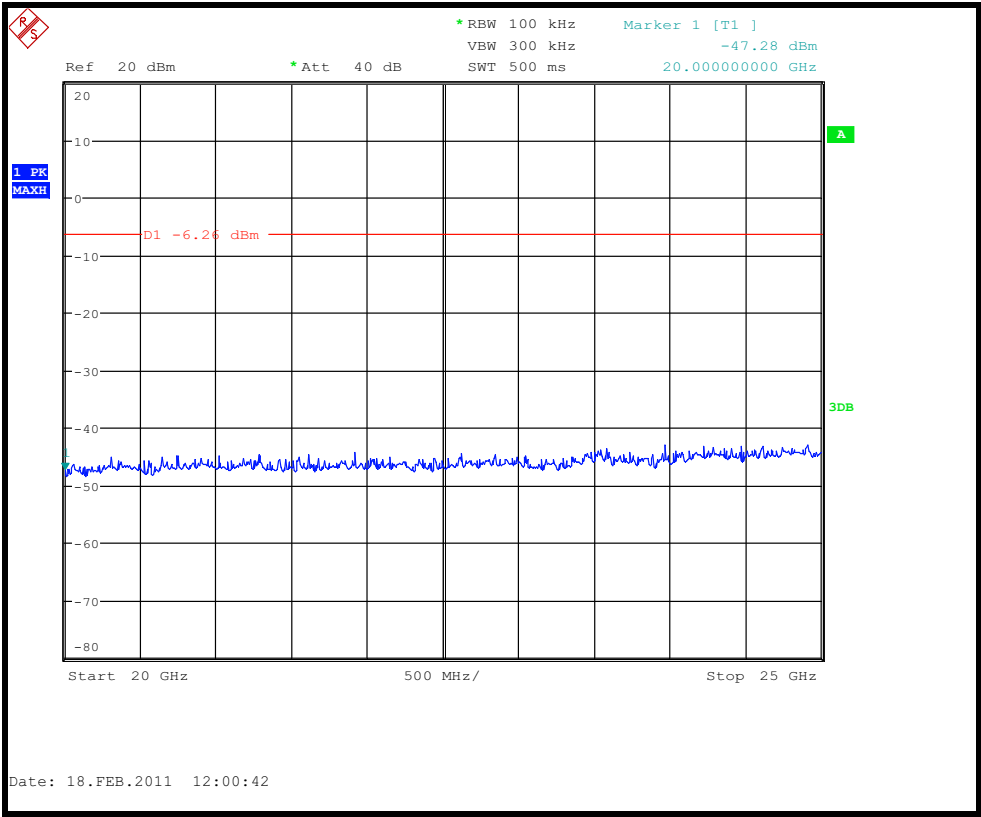
Conducted Spurious emissions 5 GHz to 10 GHz– 2480.0MHz – 1Mbps



Conducted Spurious emissions 10 GHz to 15 GHz– 2480.0MHz – 1Mbps



Conducted Spurious emissions 15 GHz to 20 GHz– 2480.0MHz – 1Mbps

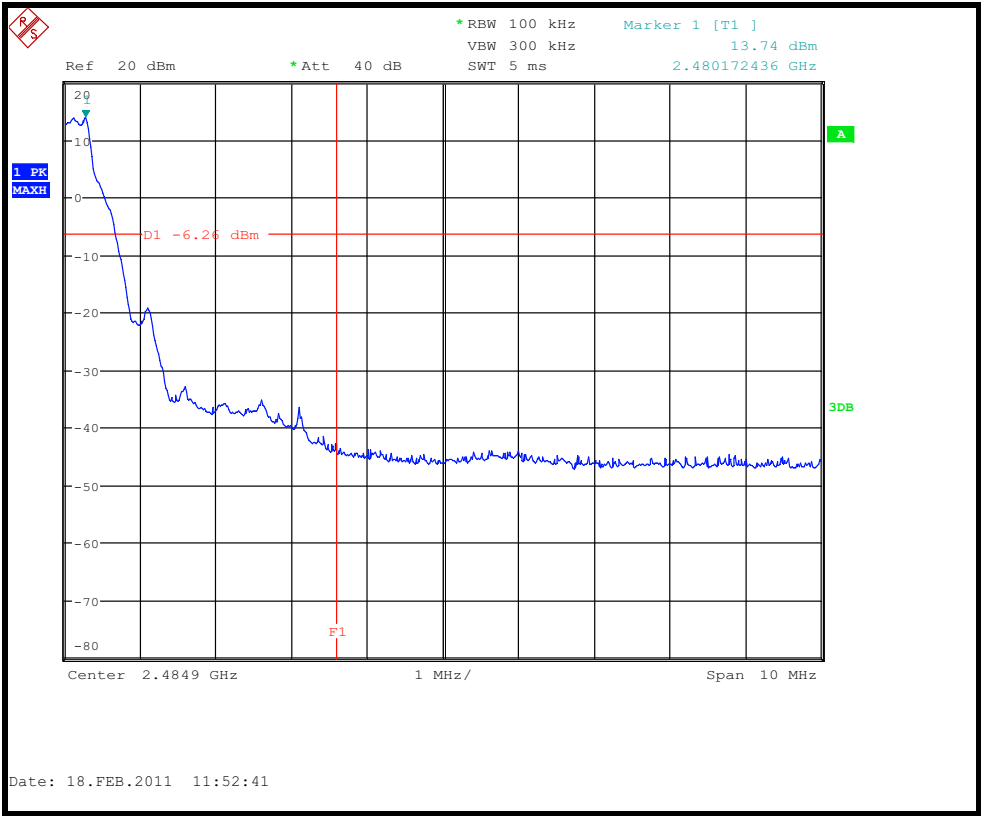


Conducted Spurious emissions 20 GHz to 25 GHz– 2480.0MHz – 1Mbps

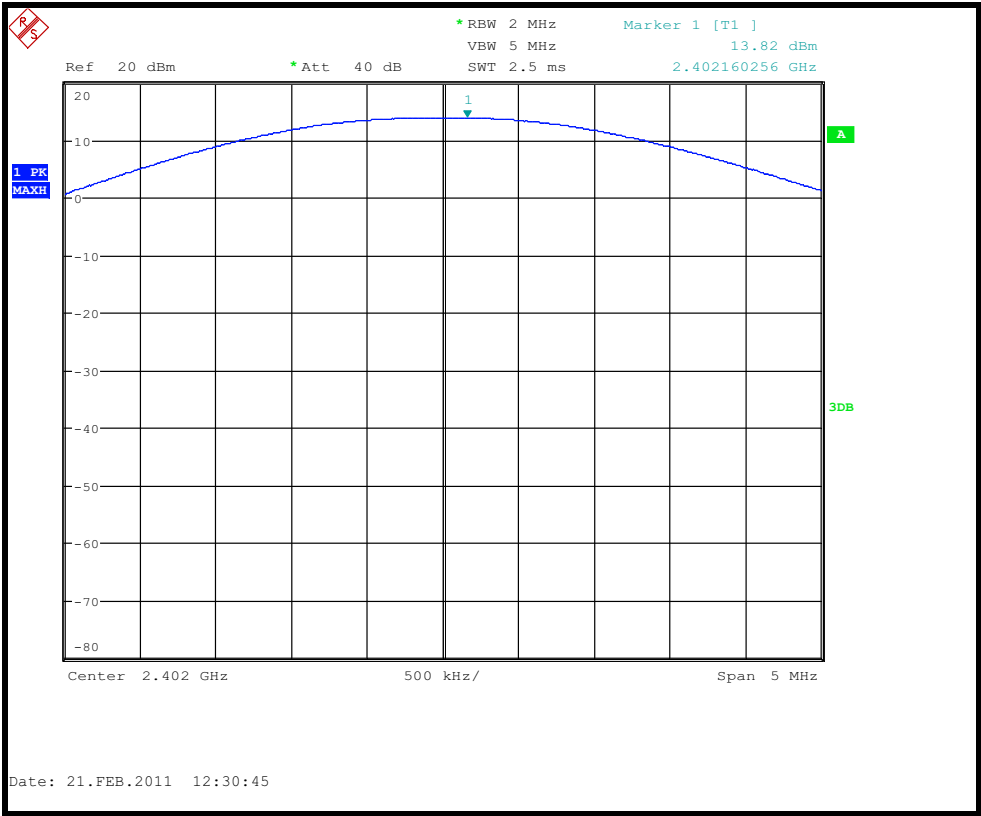
Conducted Bandedge Compliance



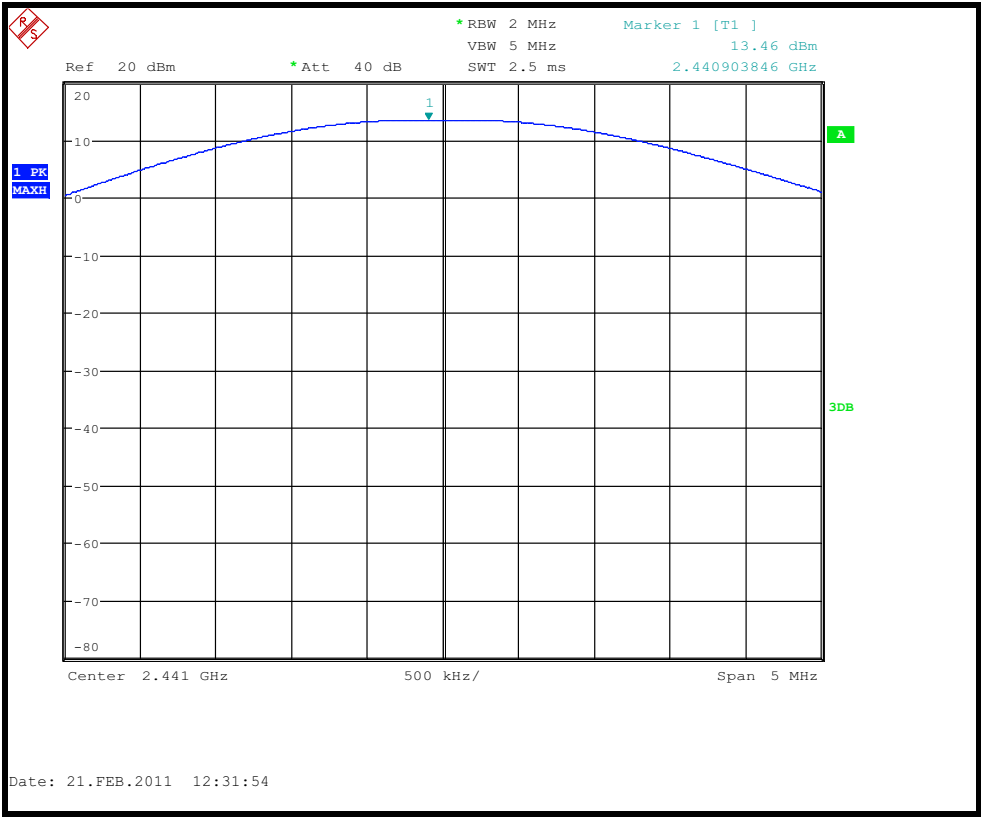
Lower Bandedge – 1Mbps



Upper Bandedge – 1Mbps



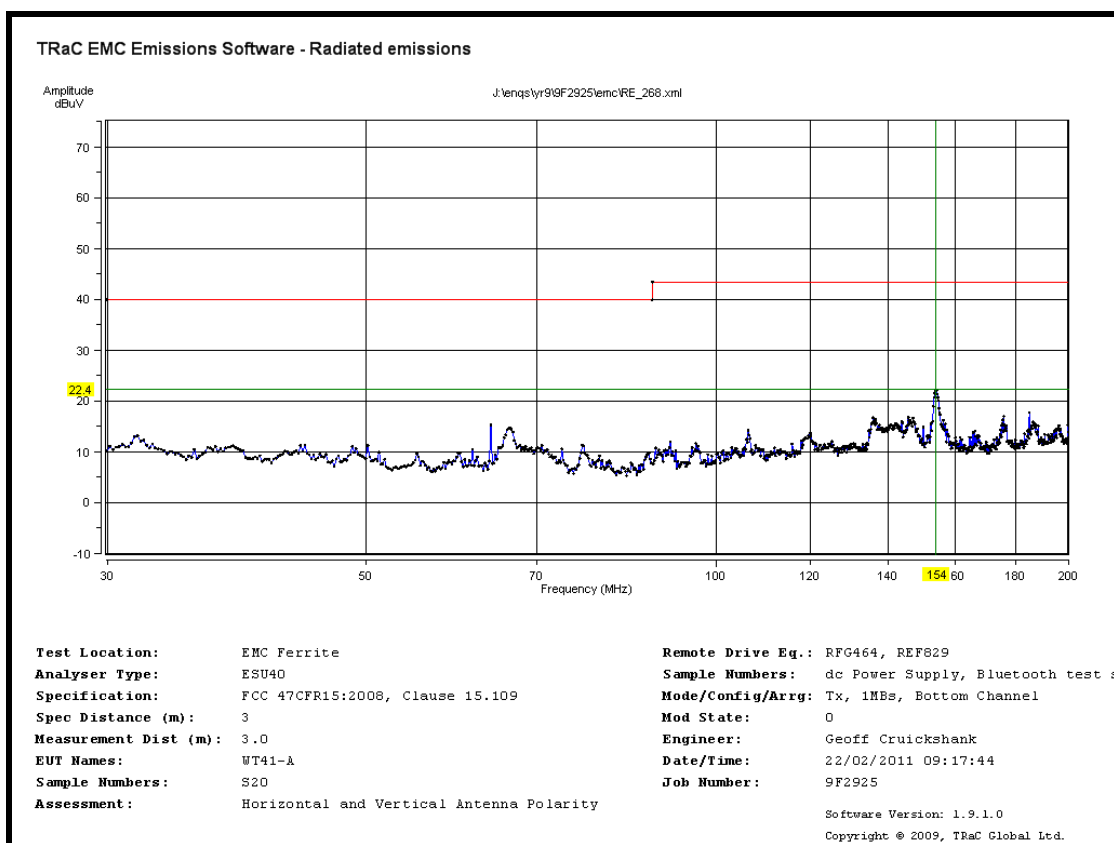
Conducted carrier power 2402.0MHz – 1Mbps



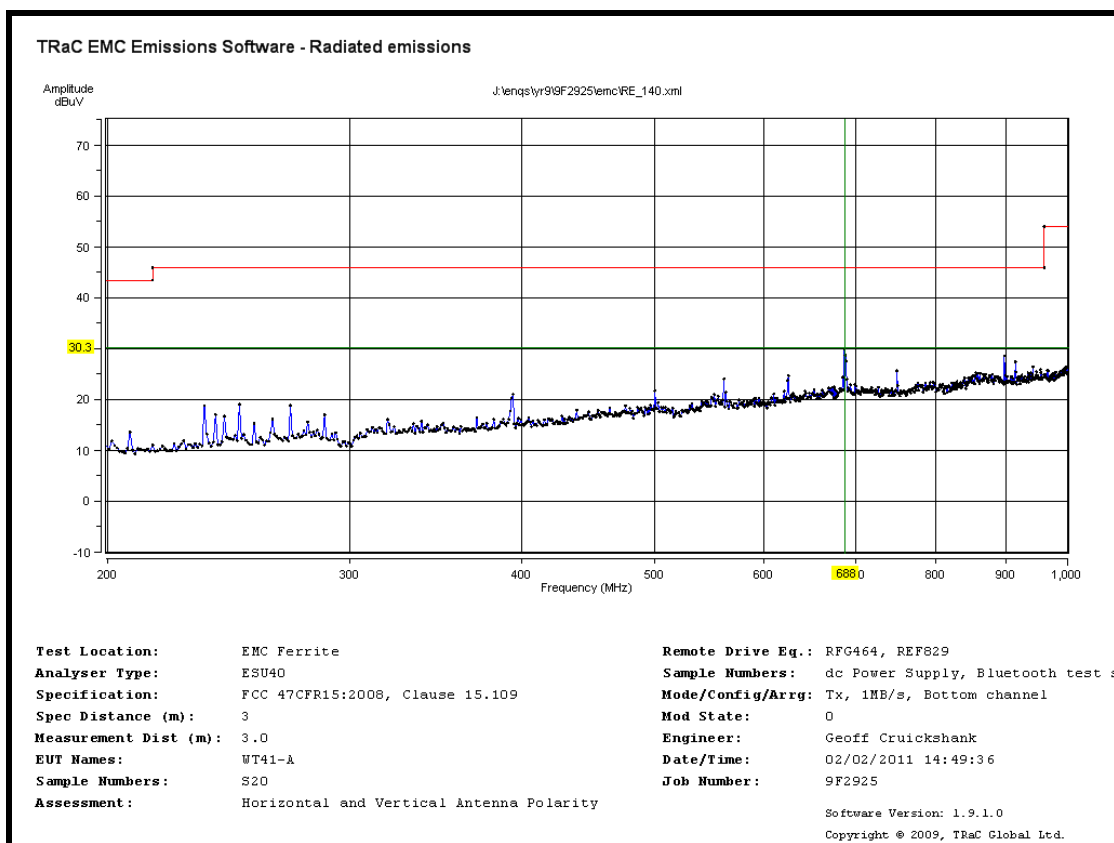
Conducted carrier power 2441.0 MHz – 1Mbps



Conducted carrier power 2480.0 MHz – 1Mbps

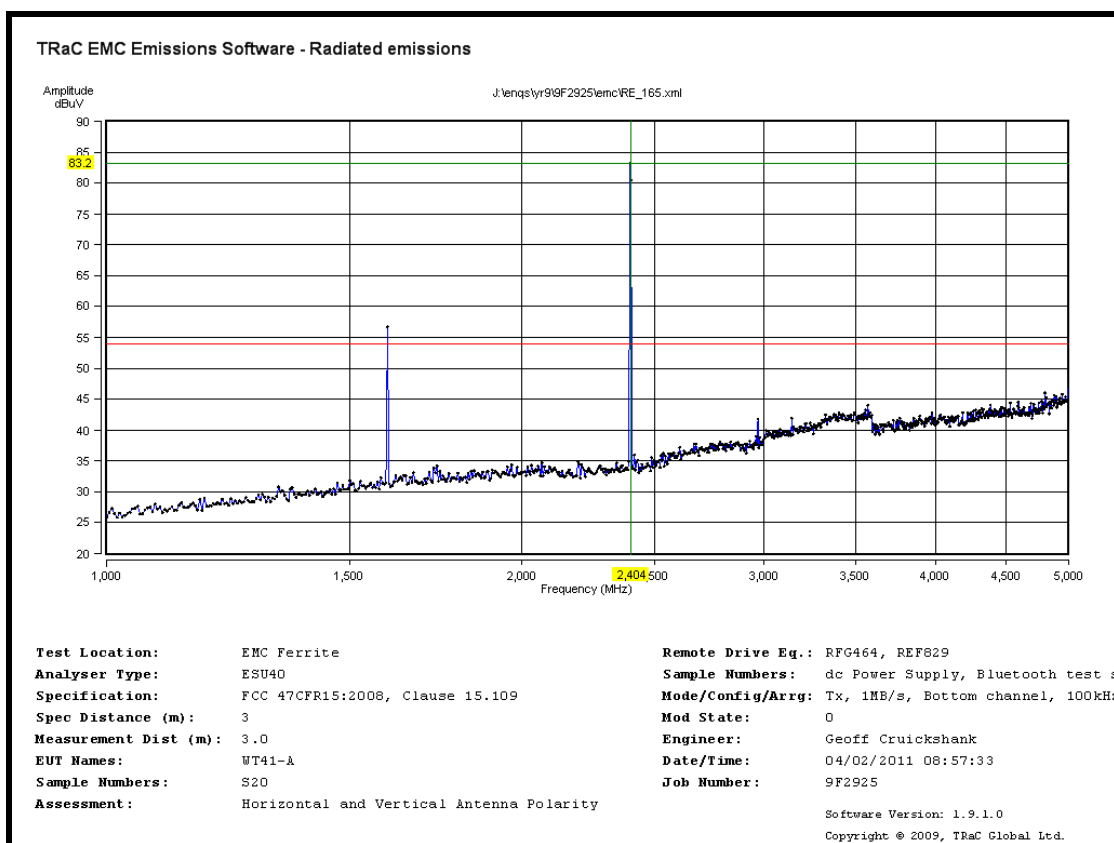


Radiated Spurious emissions 30 MHz to 200 MHz – 2402MHz – 1Mbps for S20

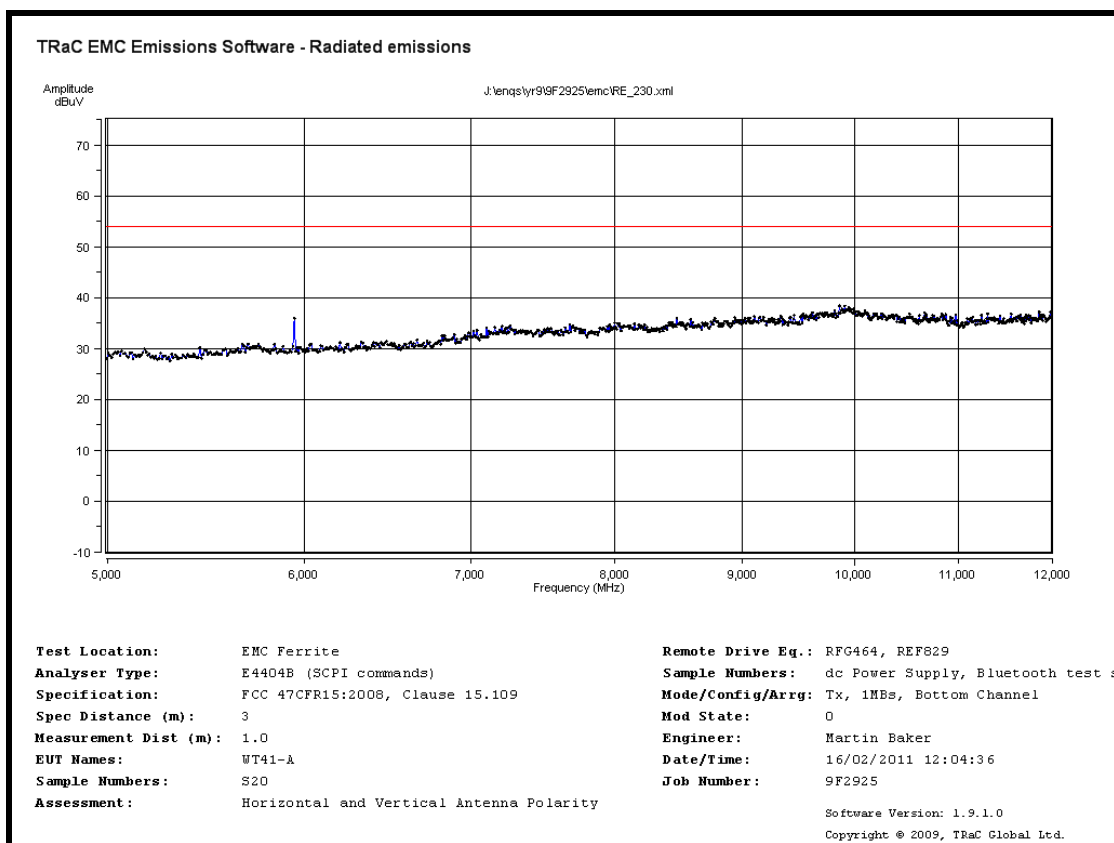


Radiated Spurious emissions 200 MHz to 1 GHz – 2402MHz – 1Mbps for S20

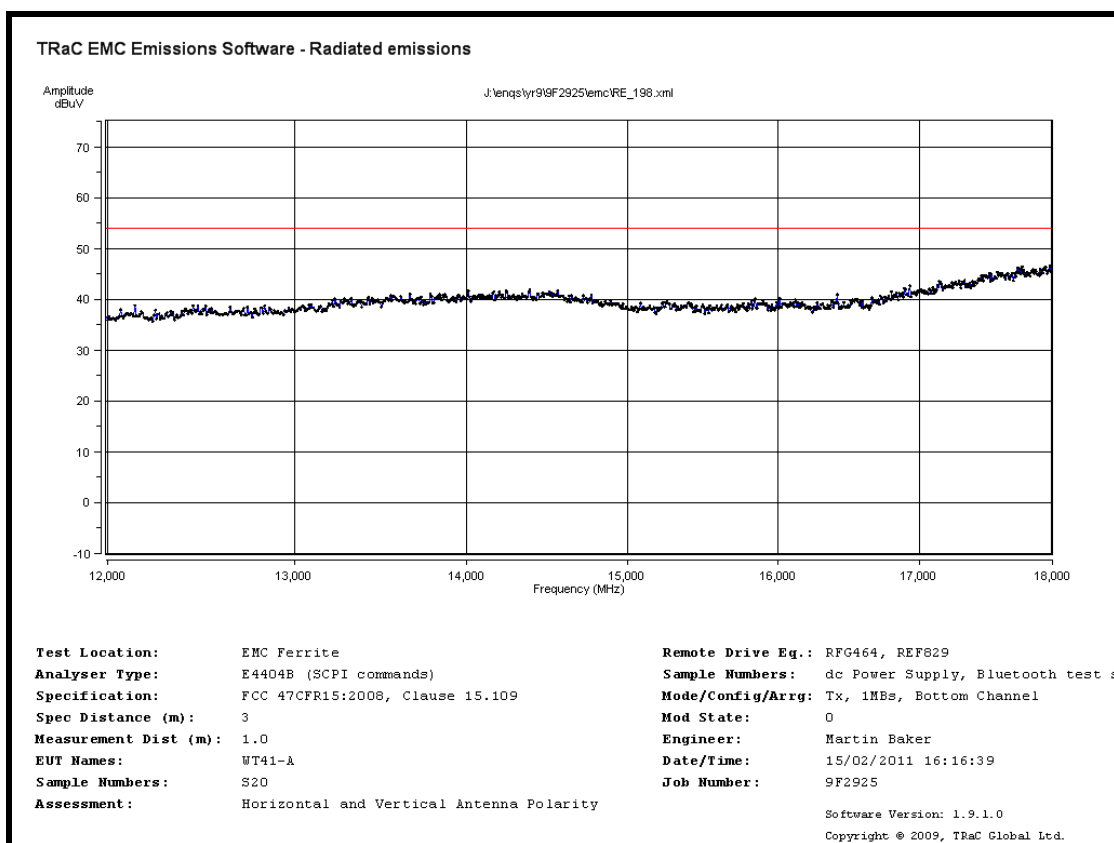




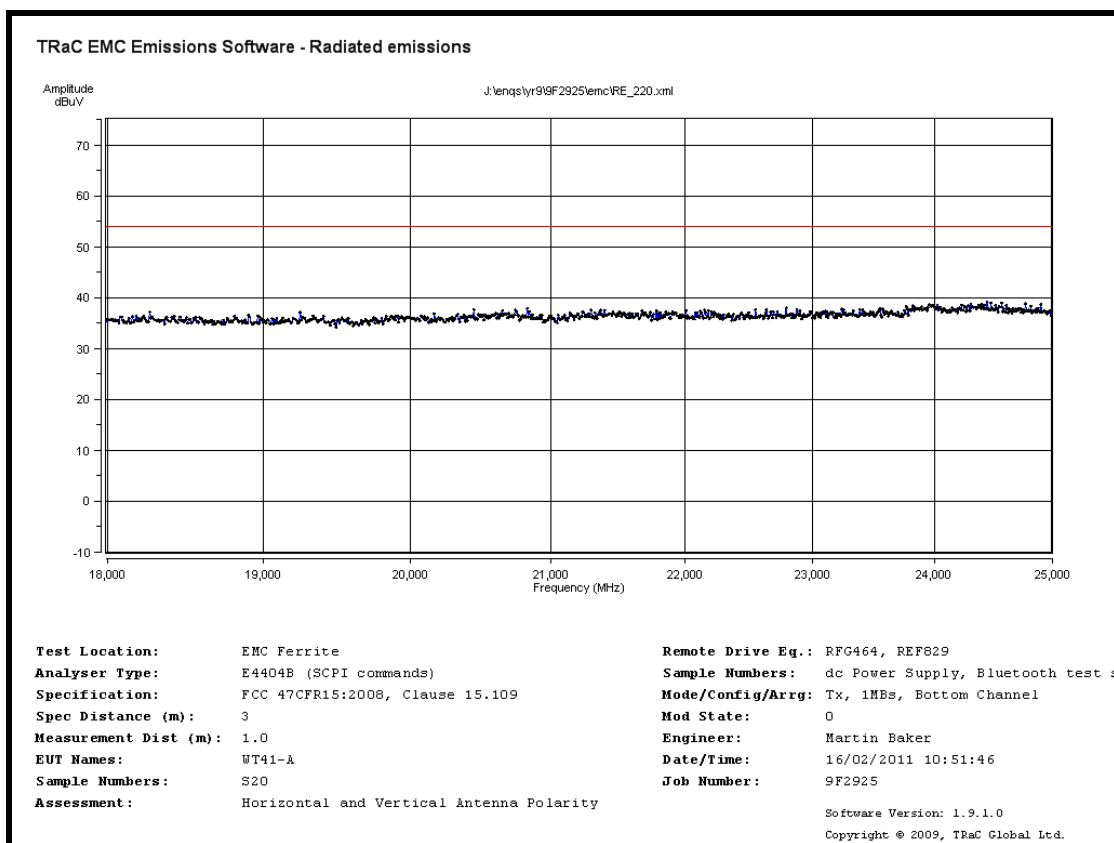
## Radiated Spurious emissions 1 GHz to 5 GHz – 2402MHz – 1Mbps for S20



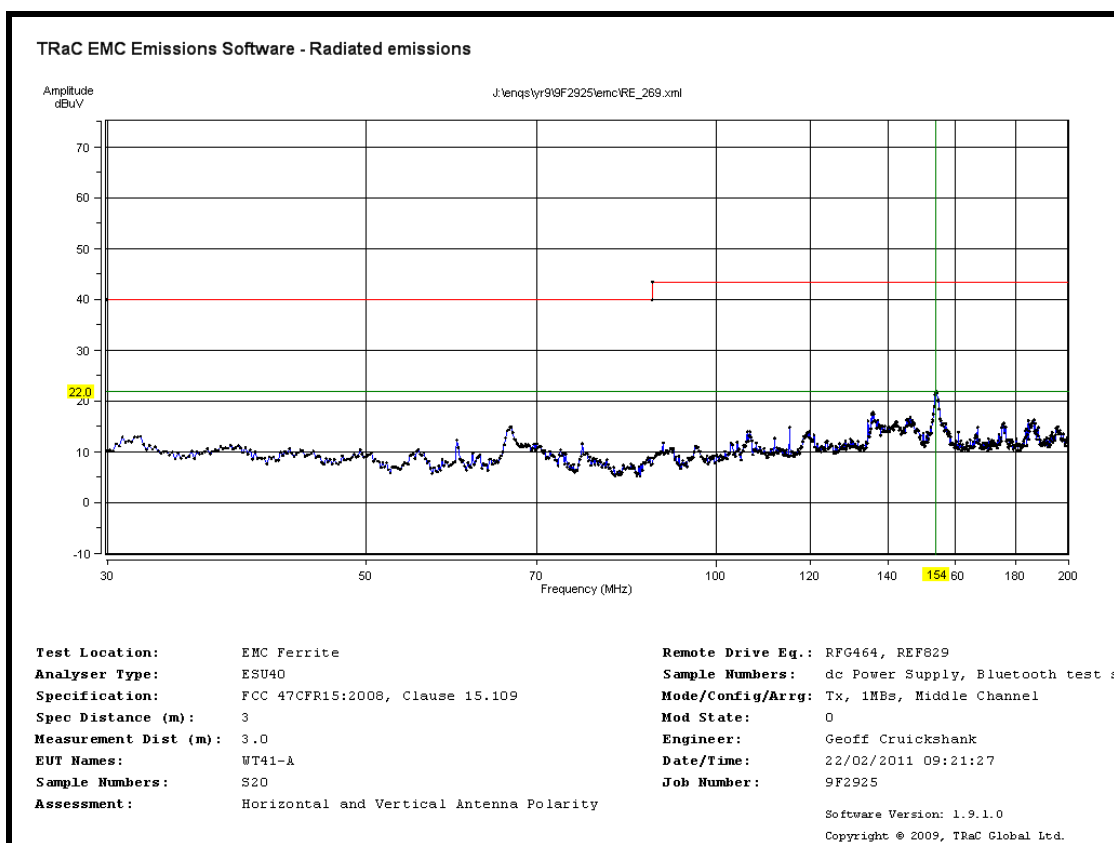
## Radiated Spurious emissions 5 GHz to 12 GHz – 2402MHz – 1Mbps for S20



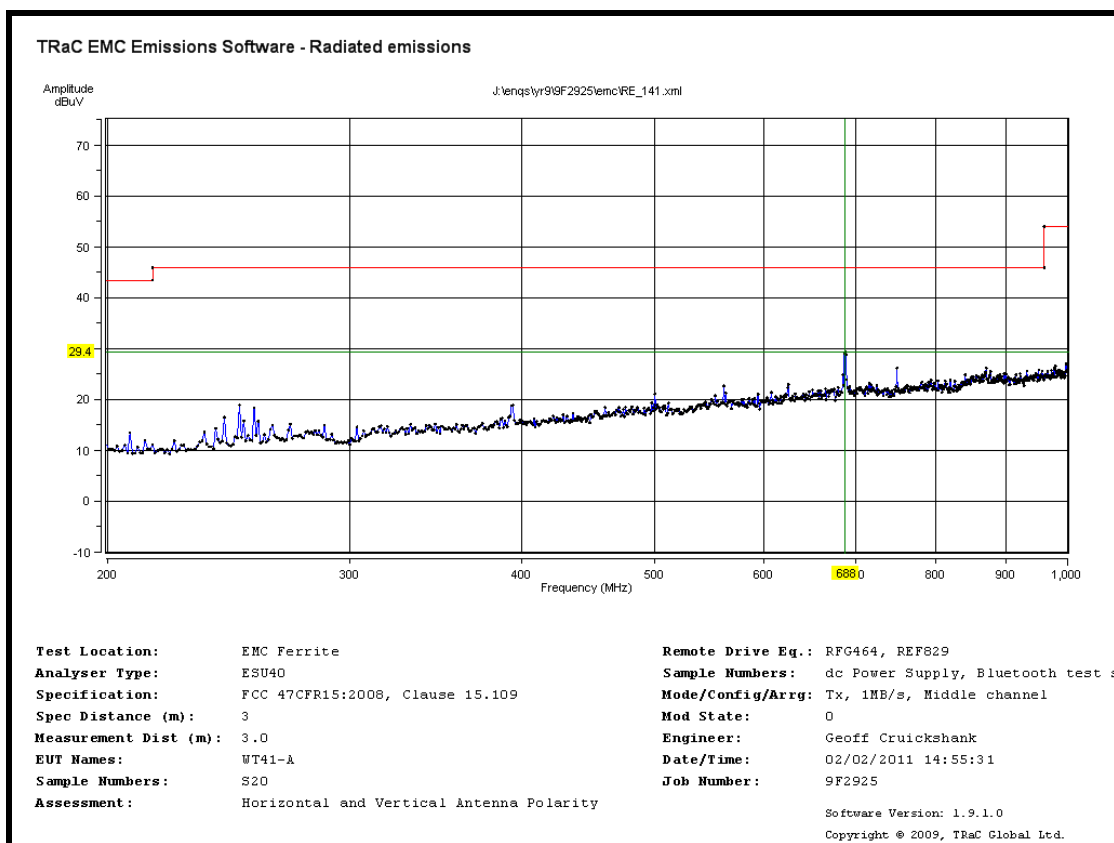
Radiated Spurious emissions 12 GHz to 18GHz – 2402MHz – 1Mbps for S20



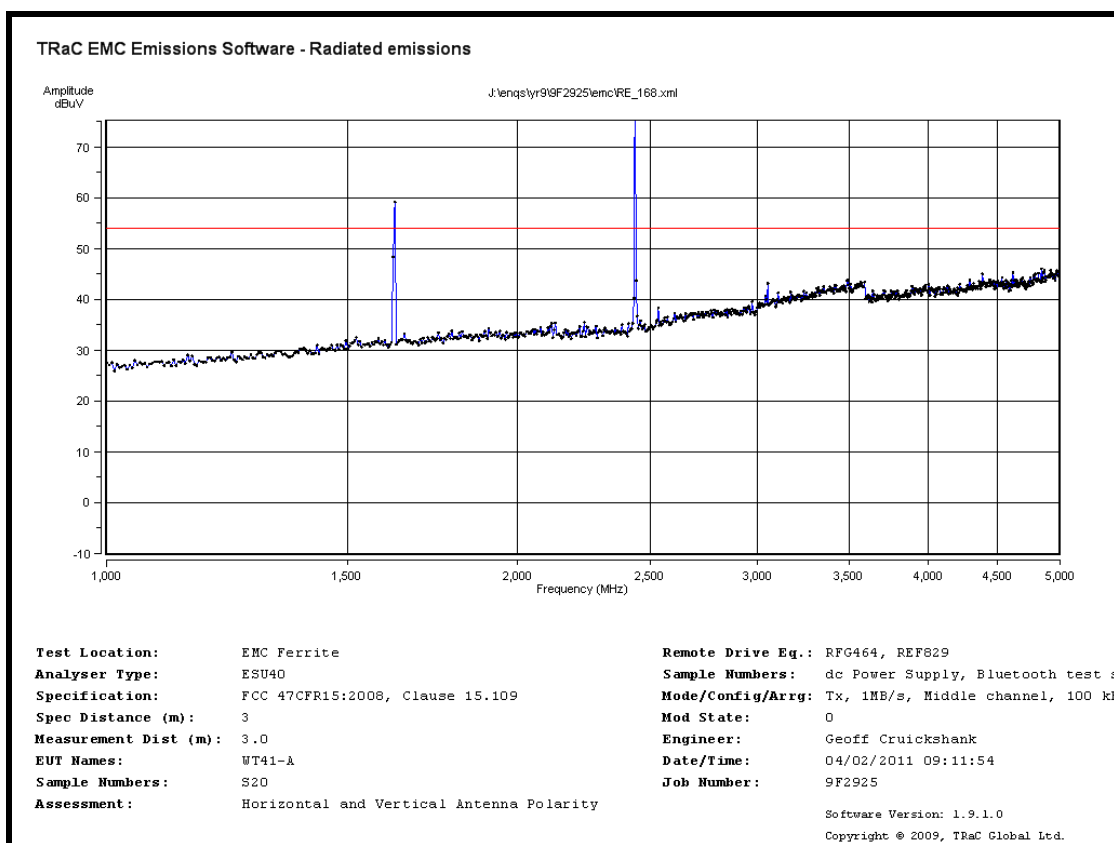
Radiated Spurious emissions 18 GHz to 25 GHz – 2402MHz – 1Mbps for S20



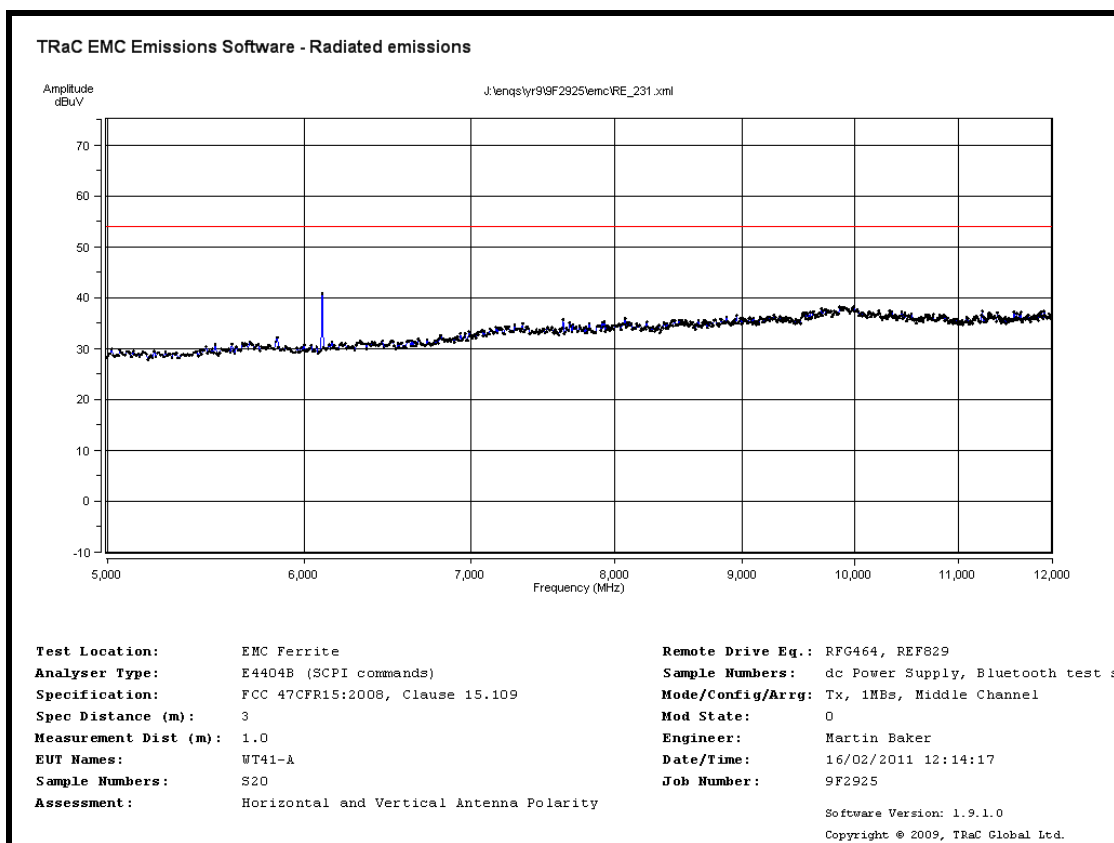
Radiated Spurious emissions 30 MHz to 200 MHz – 2441MHz – 1Mbps for S20



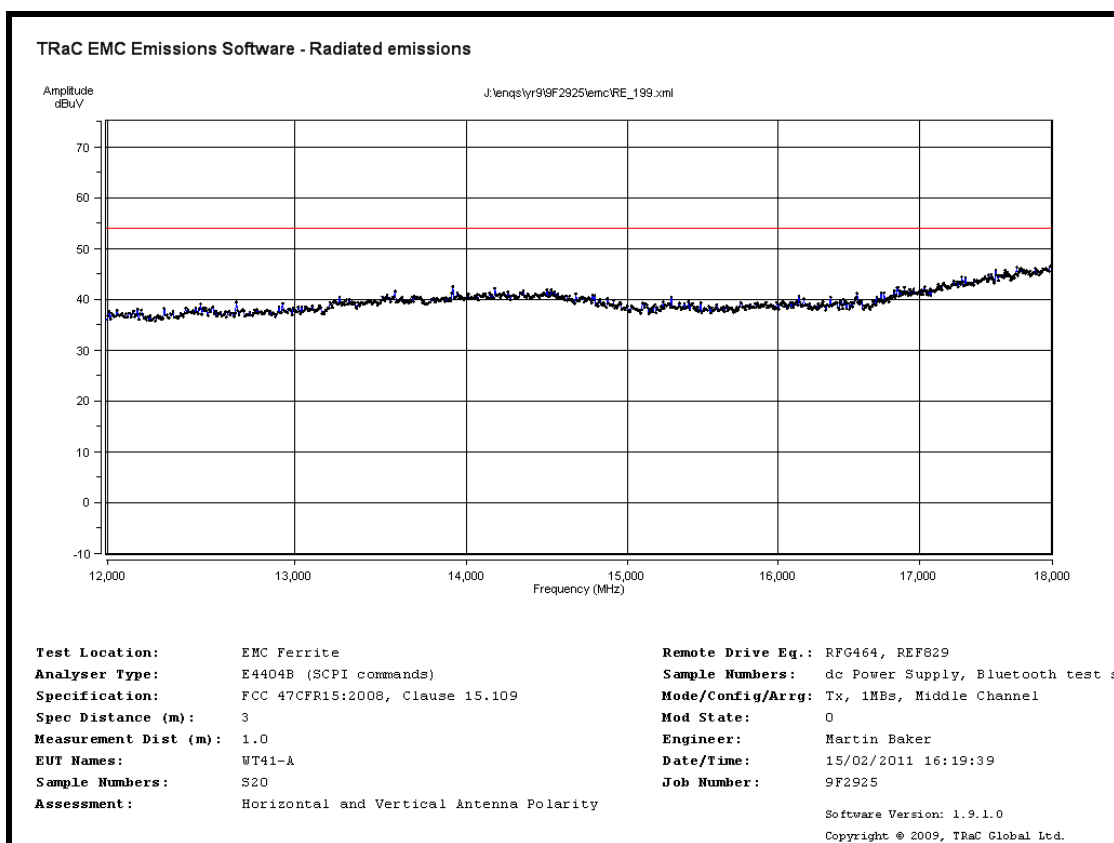
Radiated Spurious emissions 200 MHz to 1 GHz – 2441MHz – 1Mbps for S20



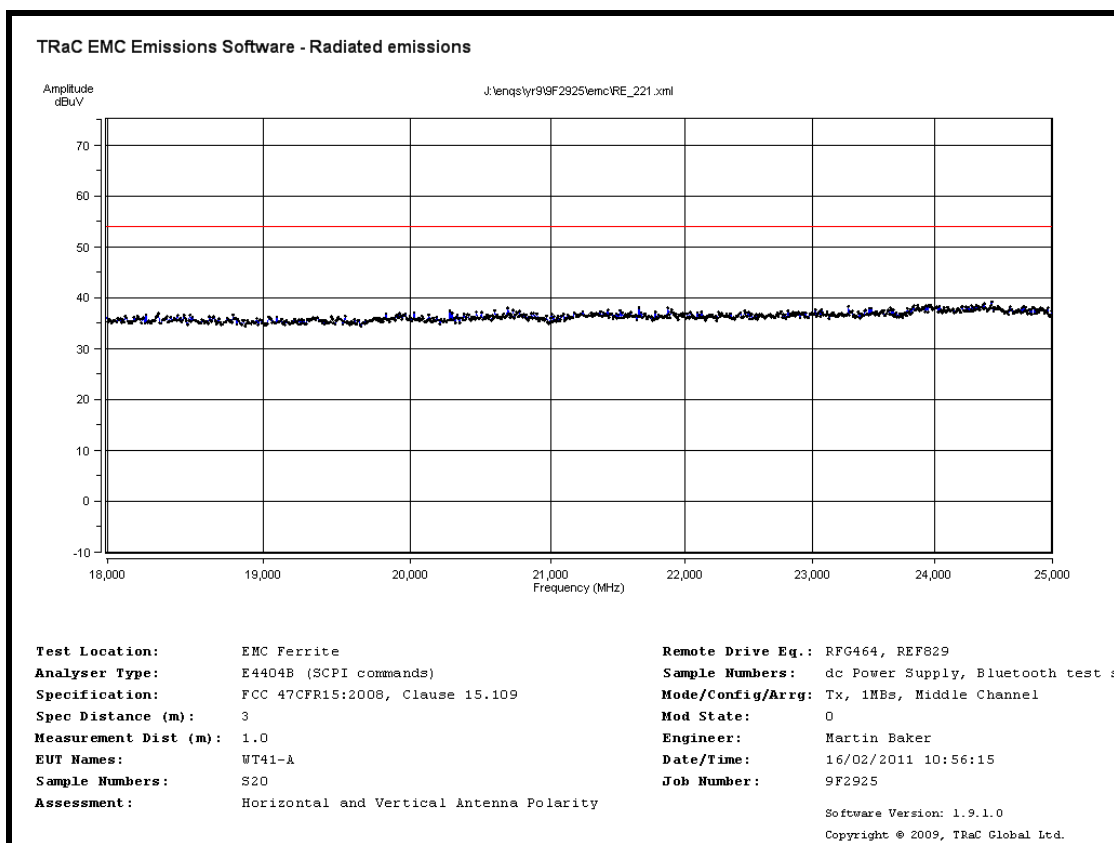
Radiated Spurious emissions 1 GHz to 5 GHz – 2441MHz – 1Mbps for S20



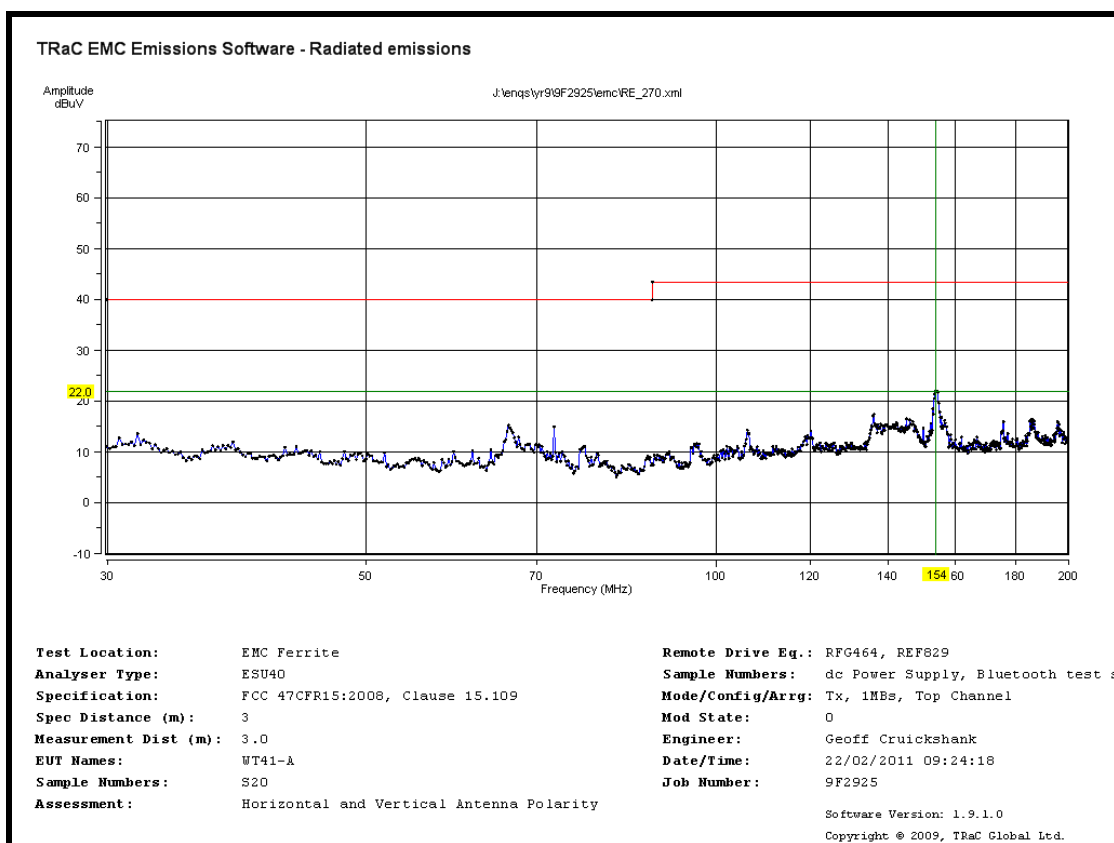
Radiated Spurious emissions 5 GHz to 12 GHz – 2441MHz – 1Mbps for S20



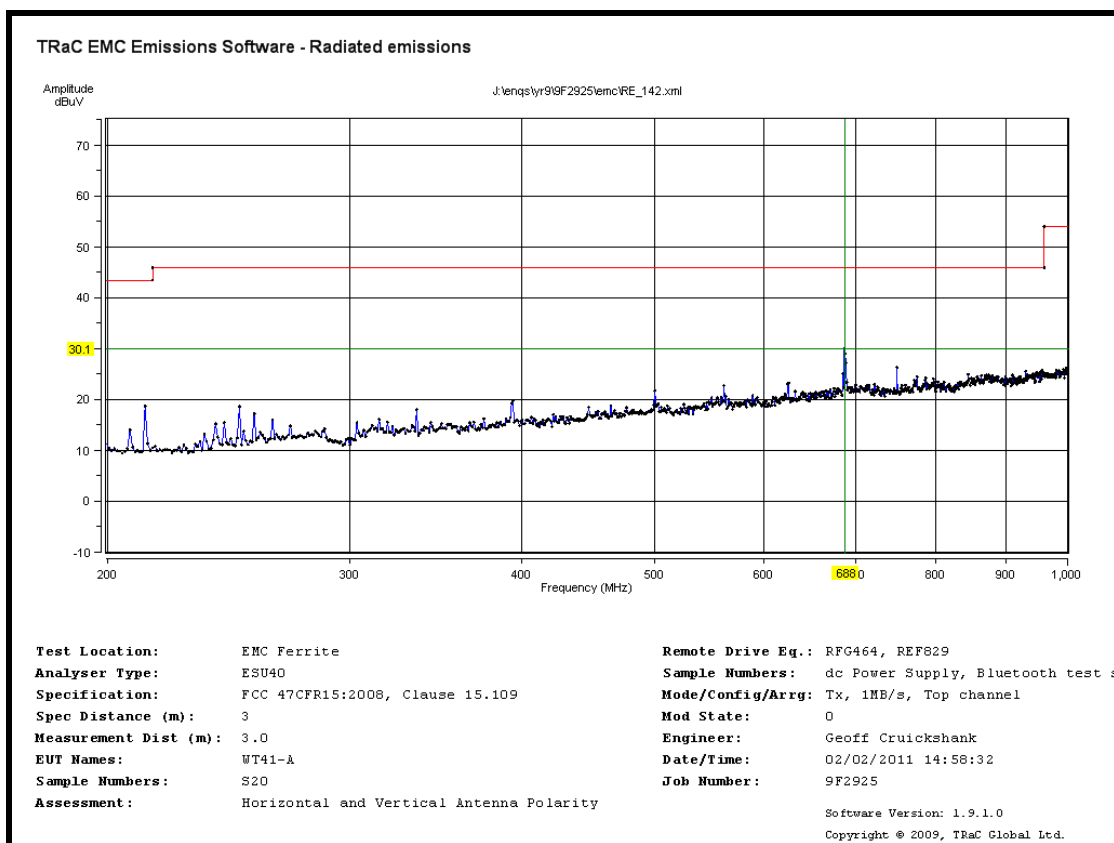
Radiated Spurious emissions 12 GHz to 18GHz – 2441MHz – 1Mbps for S20



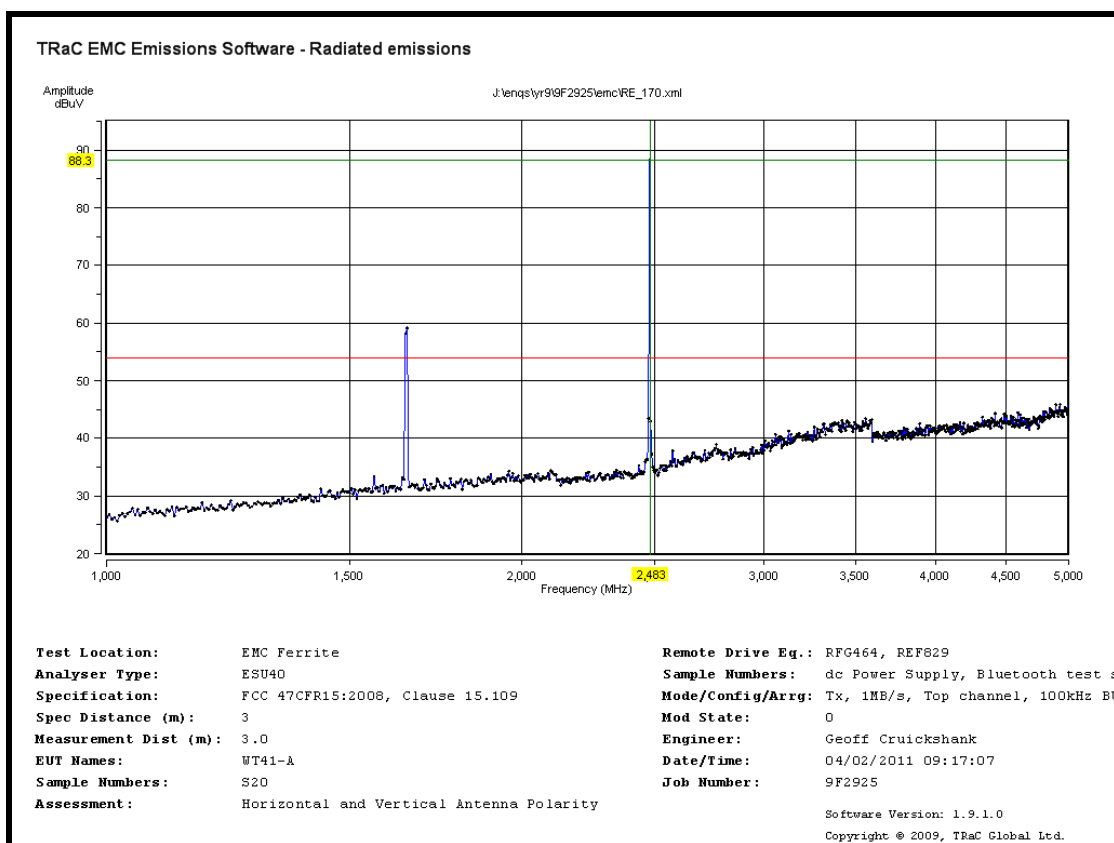
Radiated Spurious emissions 18 GHz to 25 GHz – 2441MHz – 1Mbps for S20



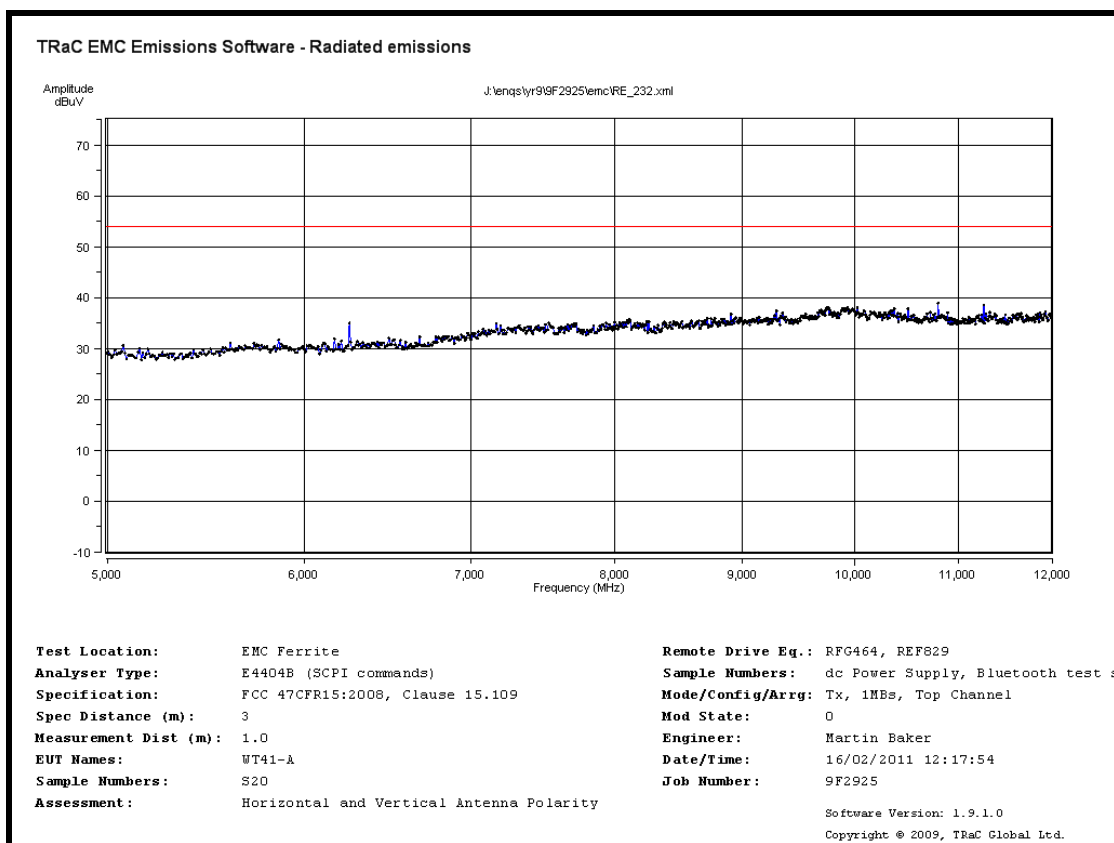
Radiated Spurious emissions 30 MHz to 200 MHz – 2480MHz – 1Mbps for S20



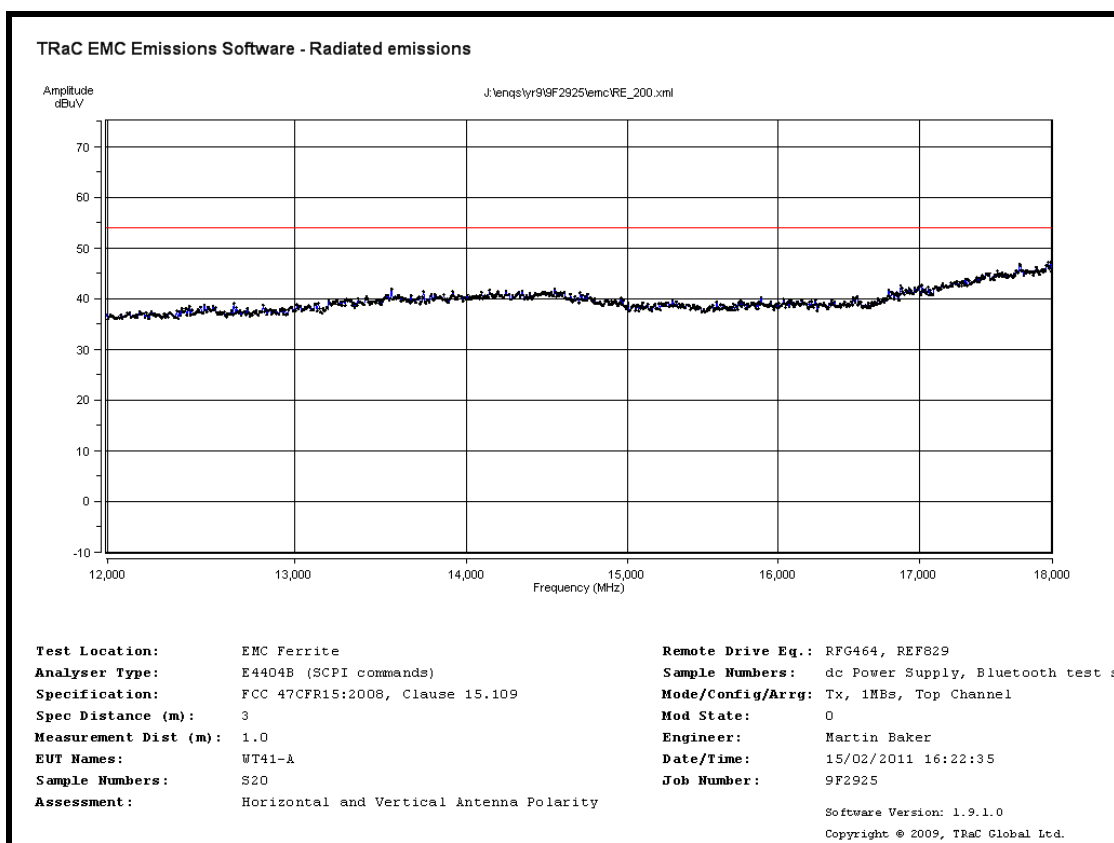
Radiated Spurious emissions 200 MHz to 1 GHz – 2480MHz – 1Mbps for S20



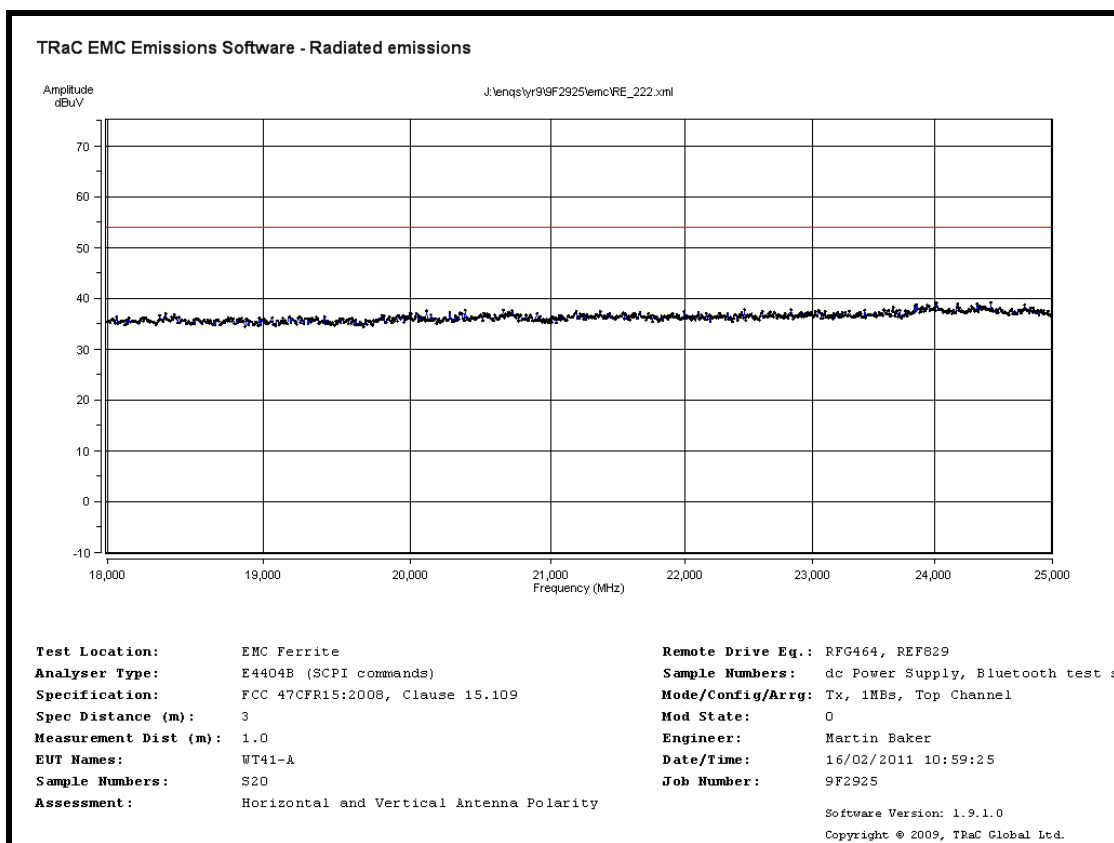
## Radiated Spurious emissions 1 GHz to 5 GHz – 2480MHz – 1Mbps for S20



## Radiated Spurious emissions 5 GHz to 12 GHz – 2480MHz – 1Mbps for S20



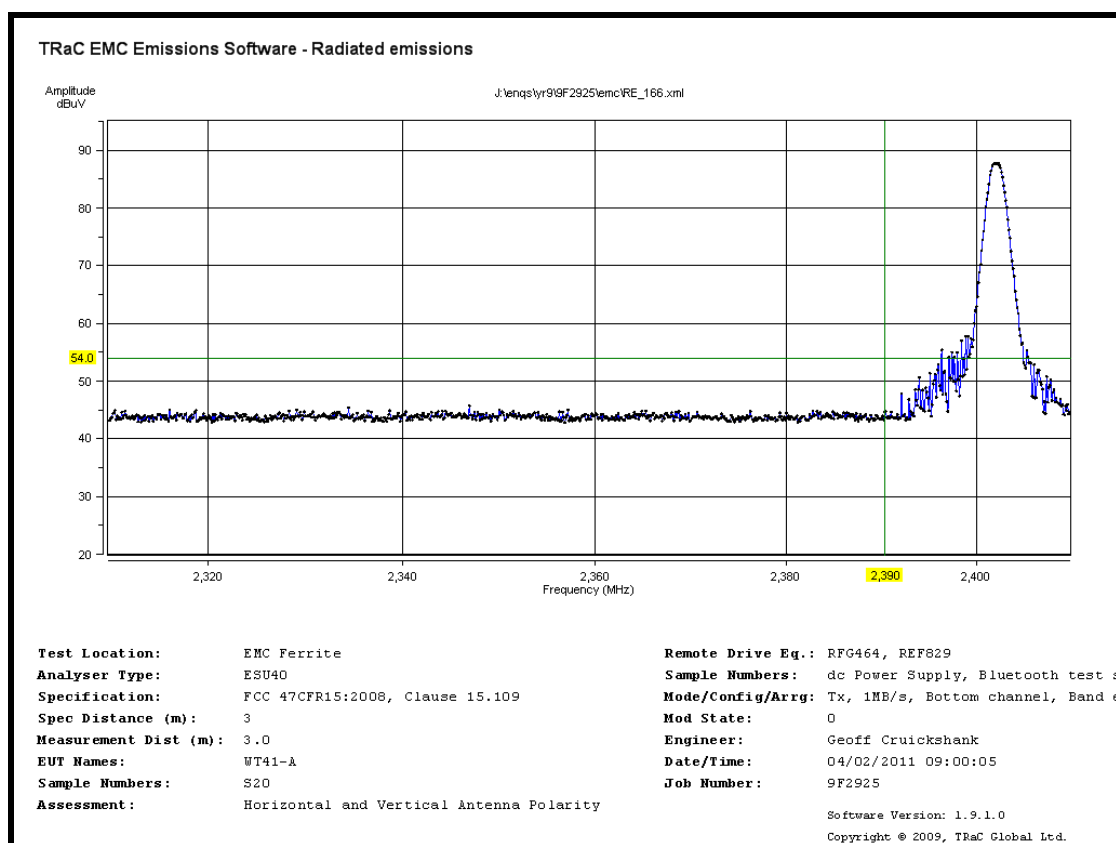
Radiated Spurious emissions 12 GHz to 18GHz – 2480MHz – 1Mbps for S20



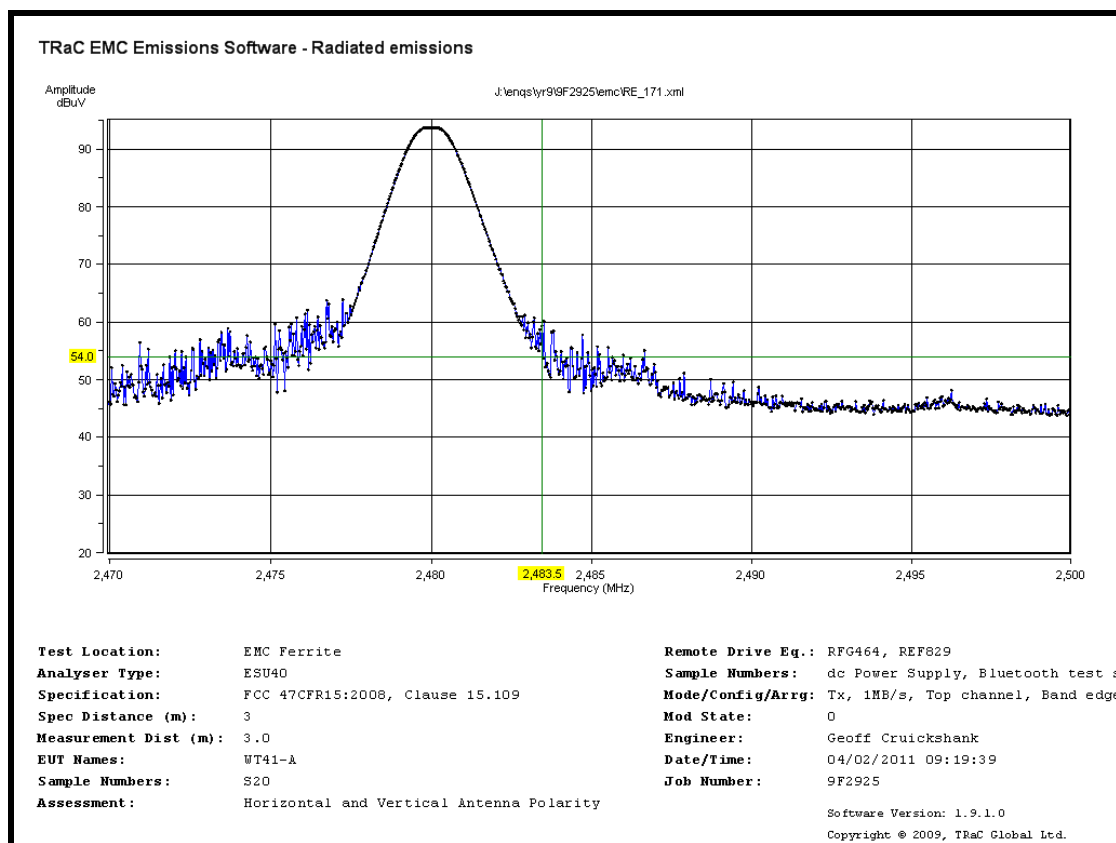
Radiated Spurious emissions 18 GHz to 25 GHz – 2480MHz – 1Mbps for S20



## Radiated Bandedge Compliance – Peak plot to average limit

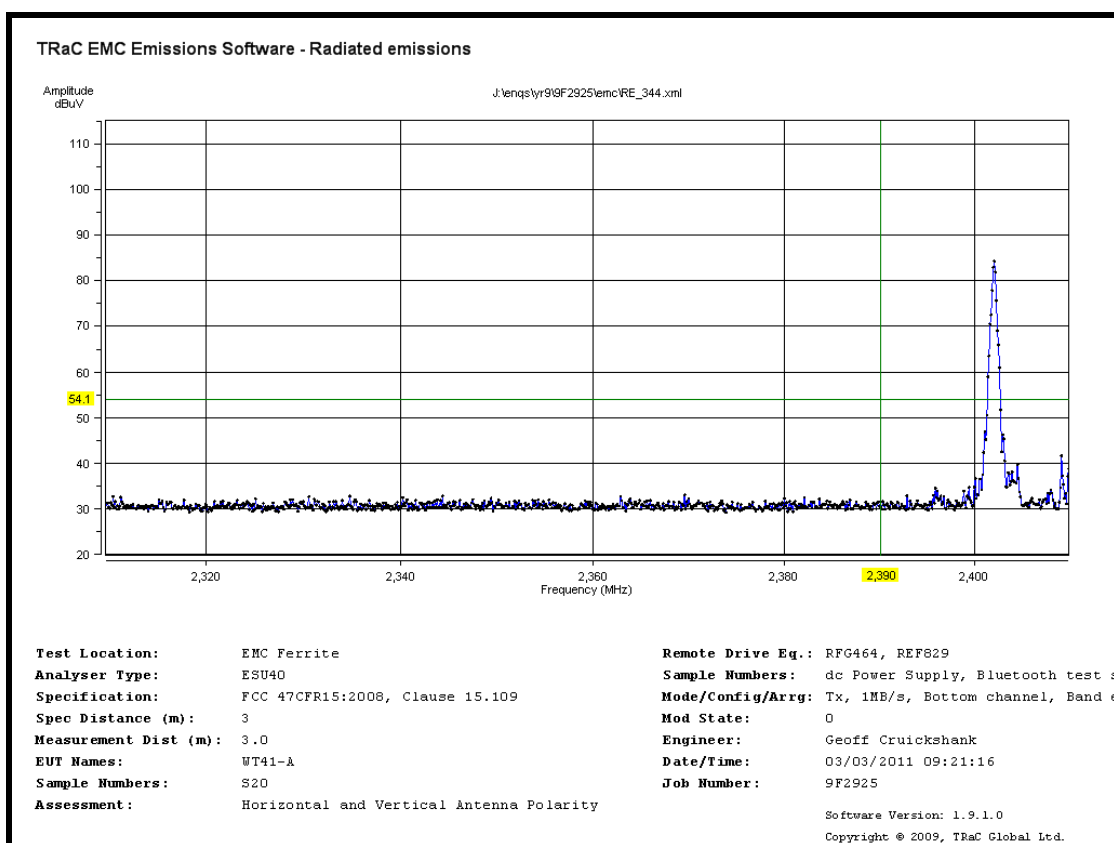


Lower Bandedge

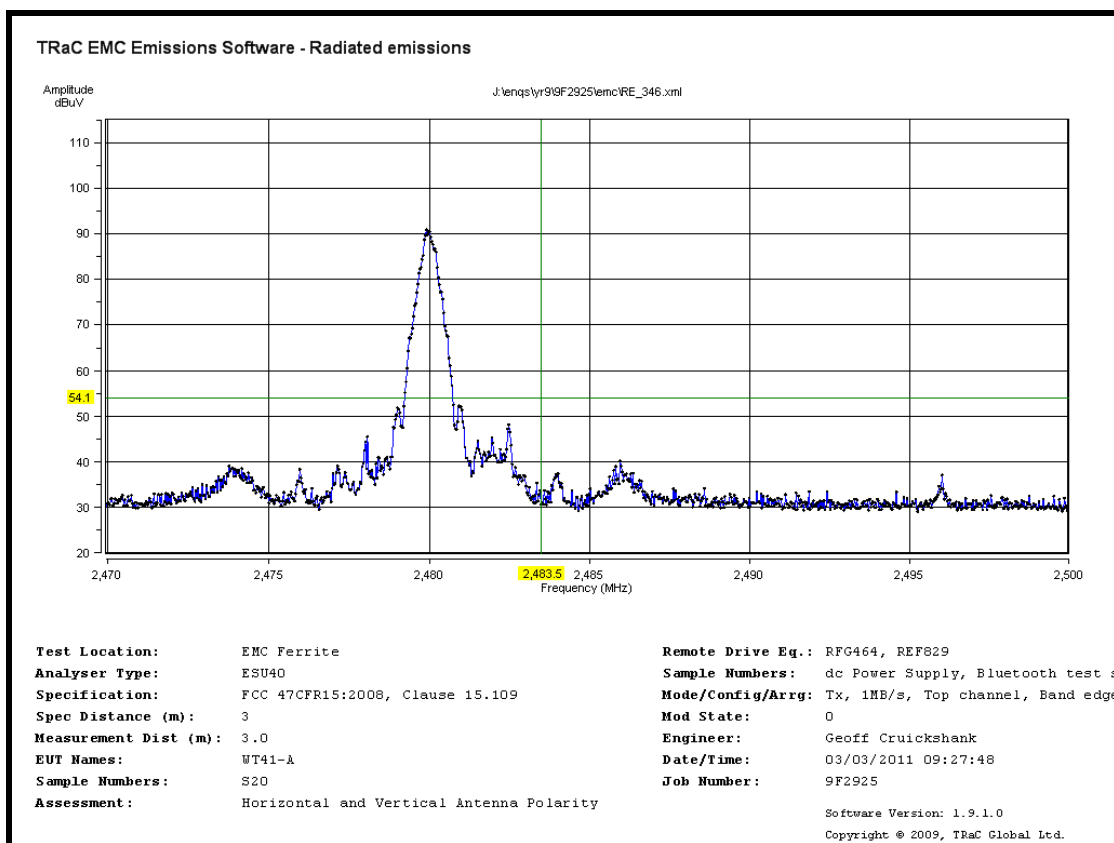


Upper Bandedge

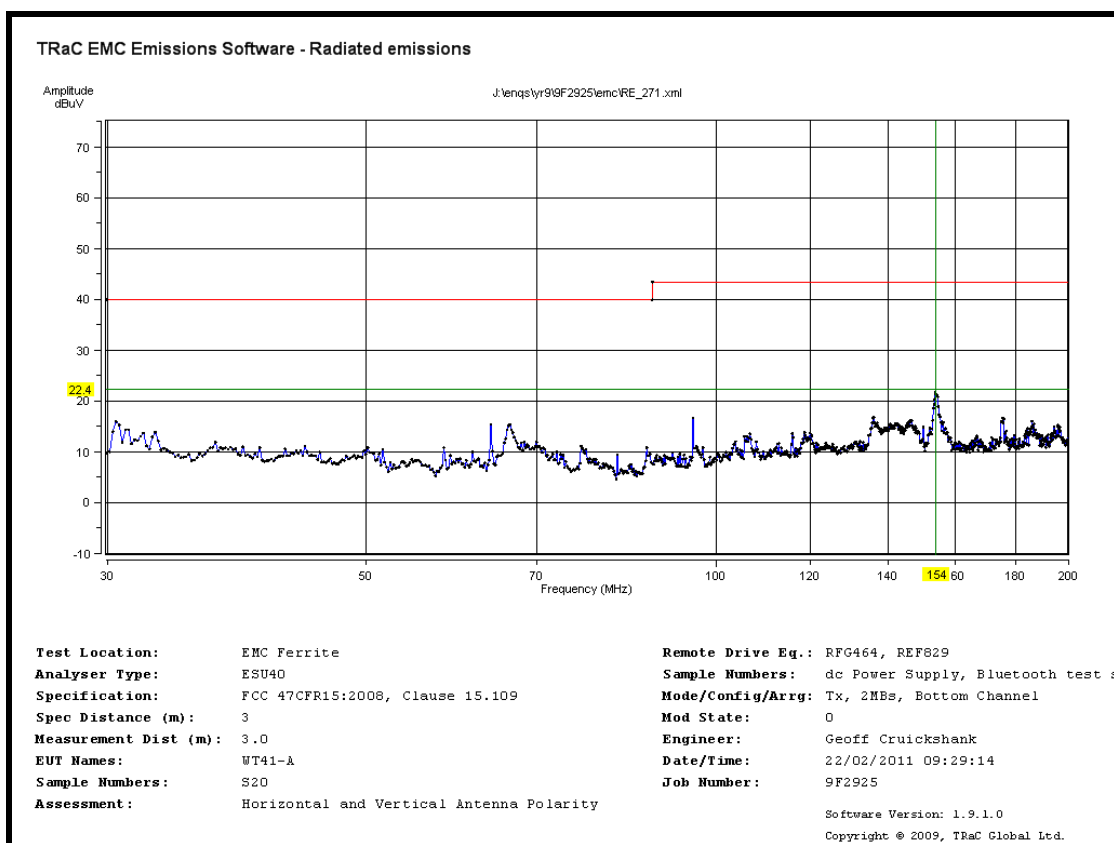
## Radiated Bandedge Compliance – Average plot to average limit



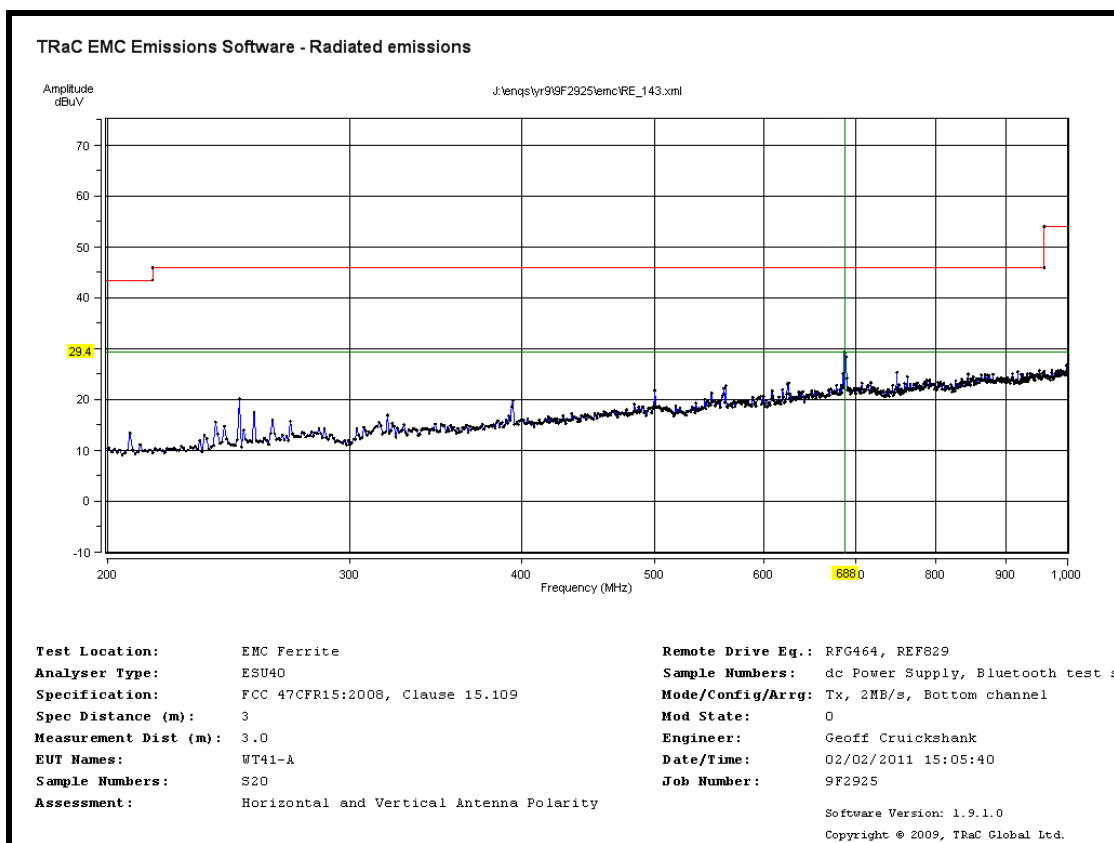
Lower Bandedge



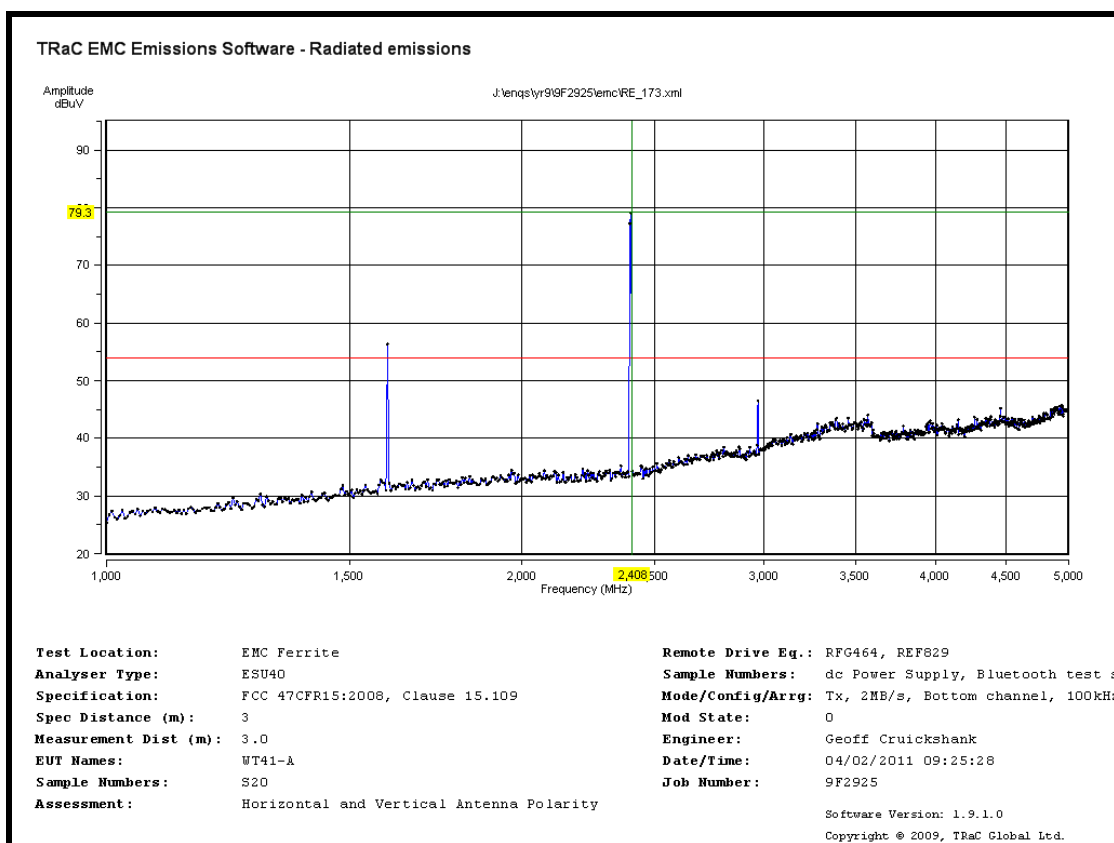
Upper Bandedge



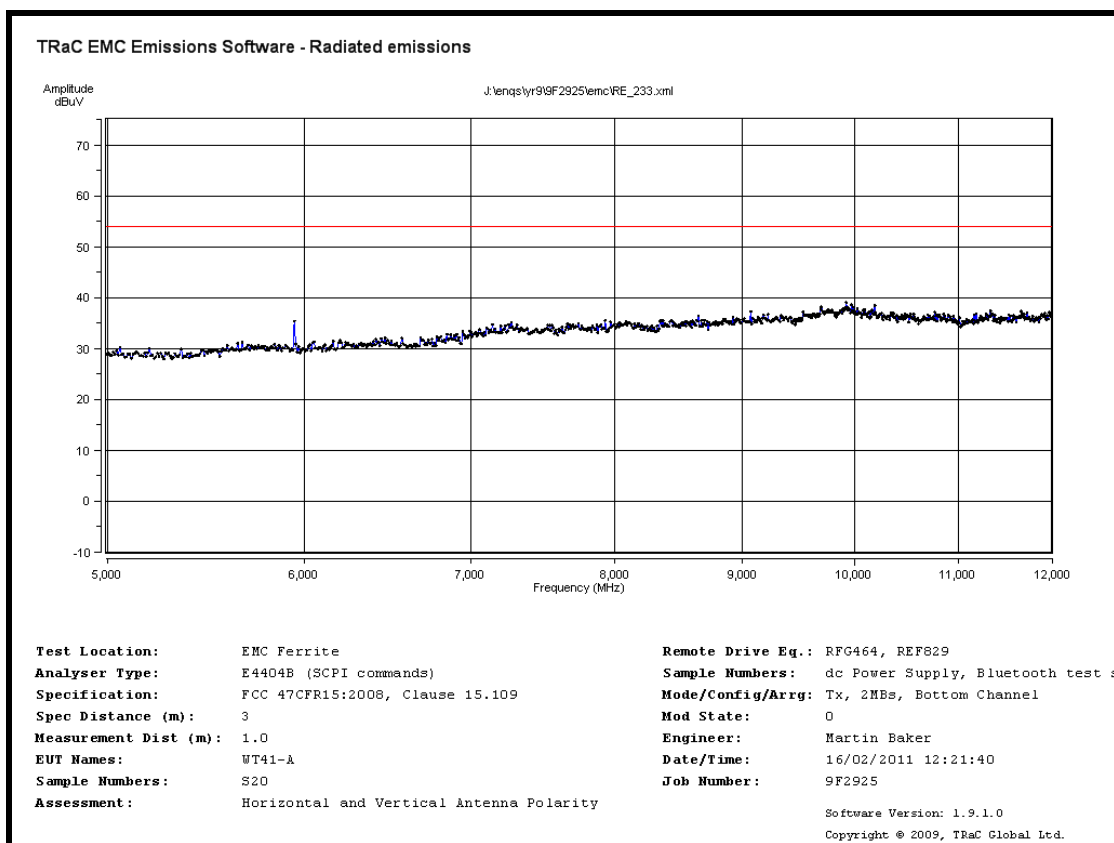
Radiated Spurious emissions 30 MHz to 200 MHz – 2402MHz – 2Mbps for S20



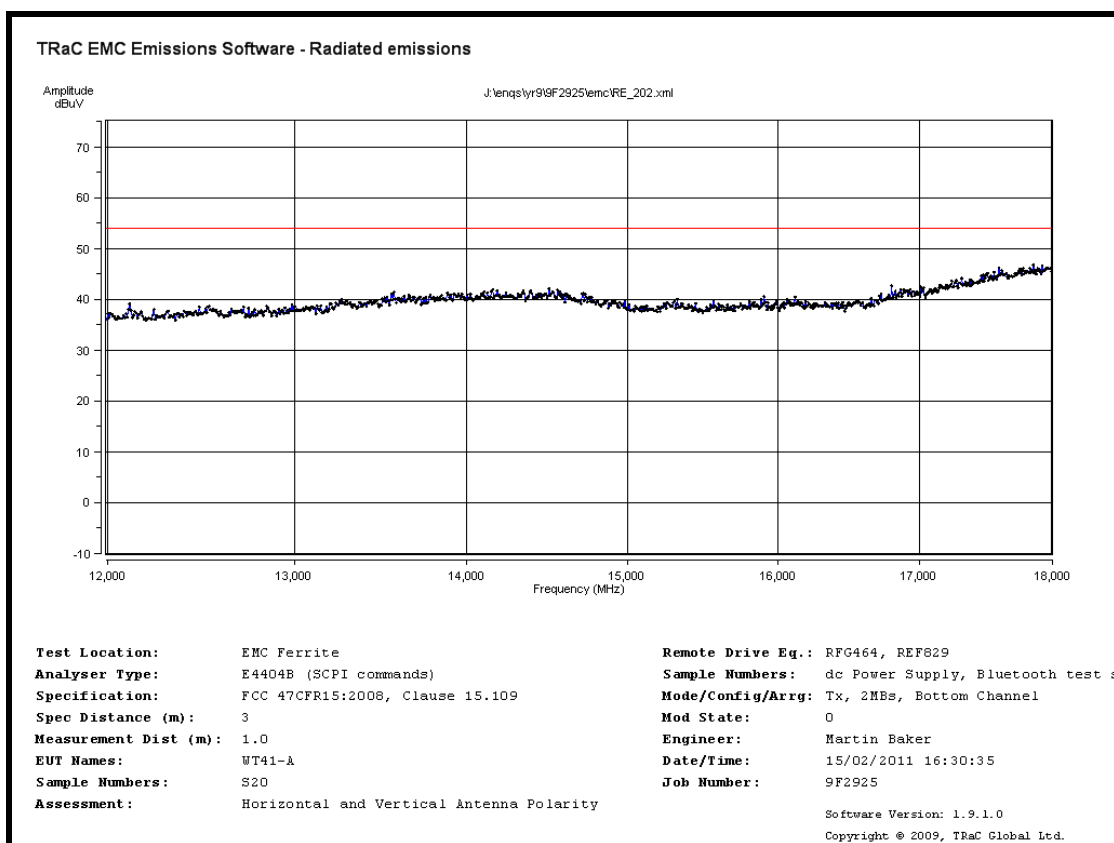
Radiated Spurious emissions 200 MHz to 1 GHz – 2402MHz – 2Mbps for S20



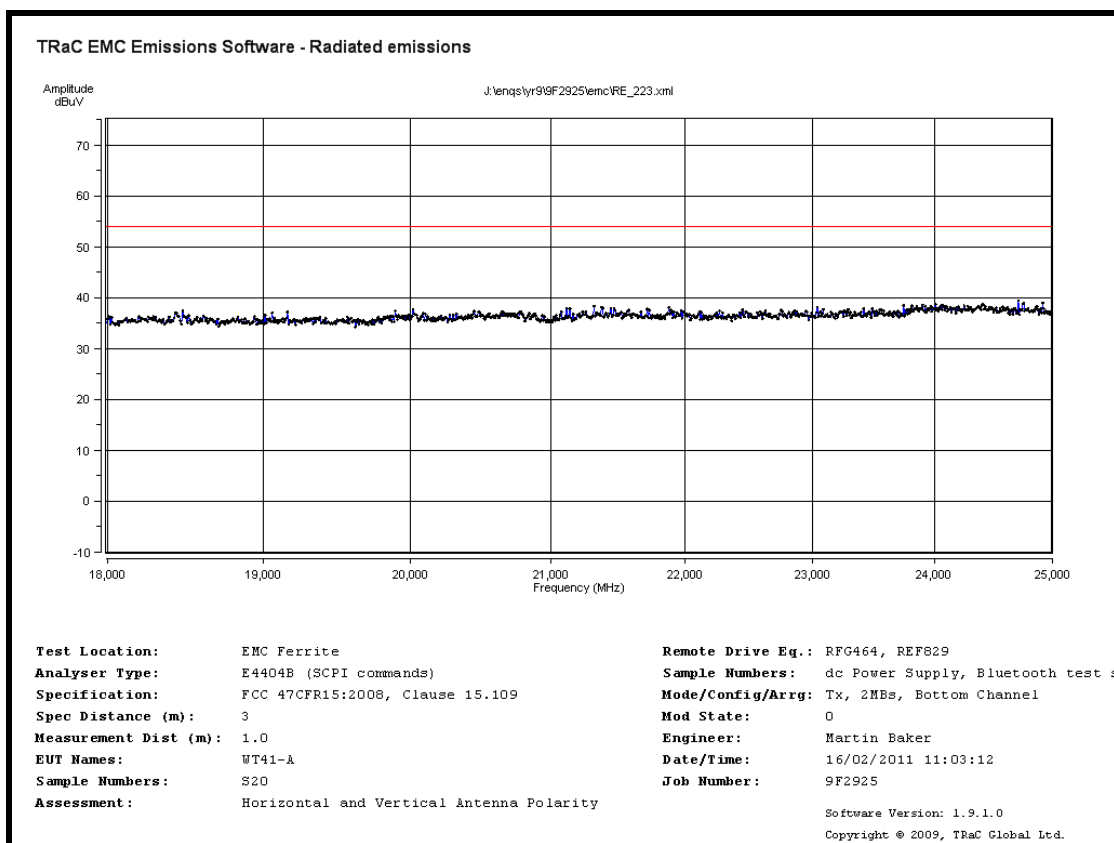
## Radiated Spurious emissions 1 GHz to 5 GHz – 2402MHz – 2Mbps for S20



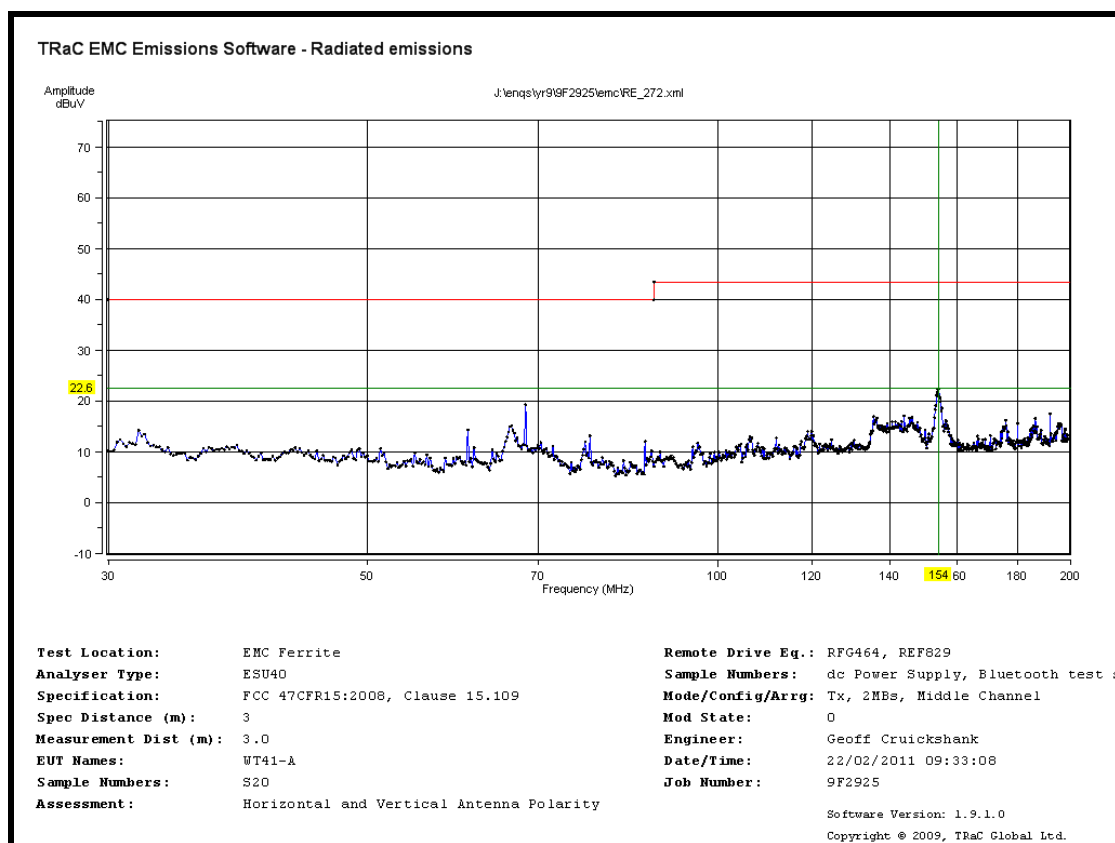
## Radiated Spurious emissions 5 GHz to 12 GHz – 2402MHz – 2Mbps for S20



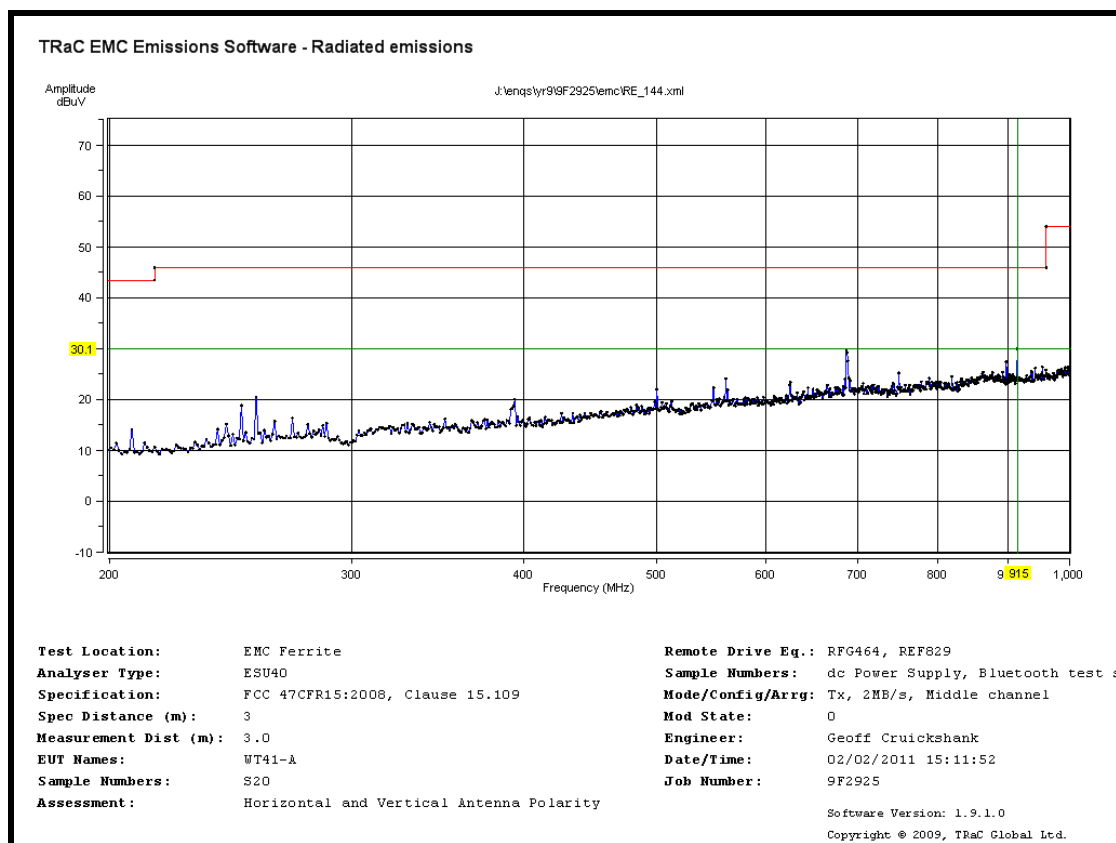
Radiated Spurious emissions 12 GHz to 18GHz – 2402MHz – 2Mbps for S20



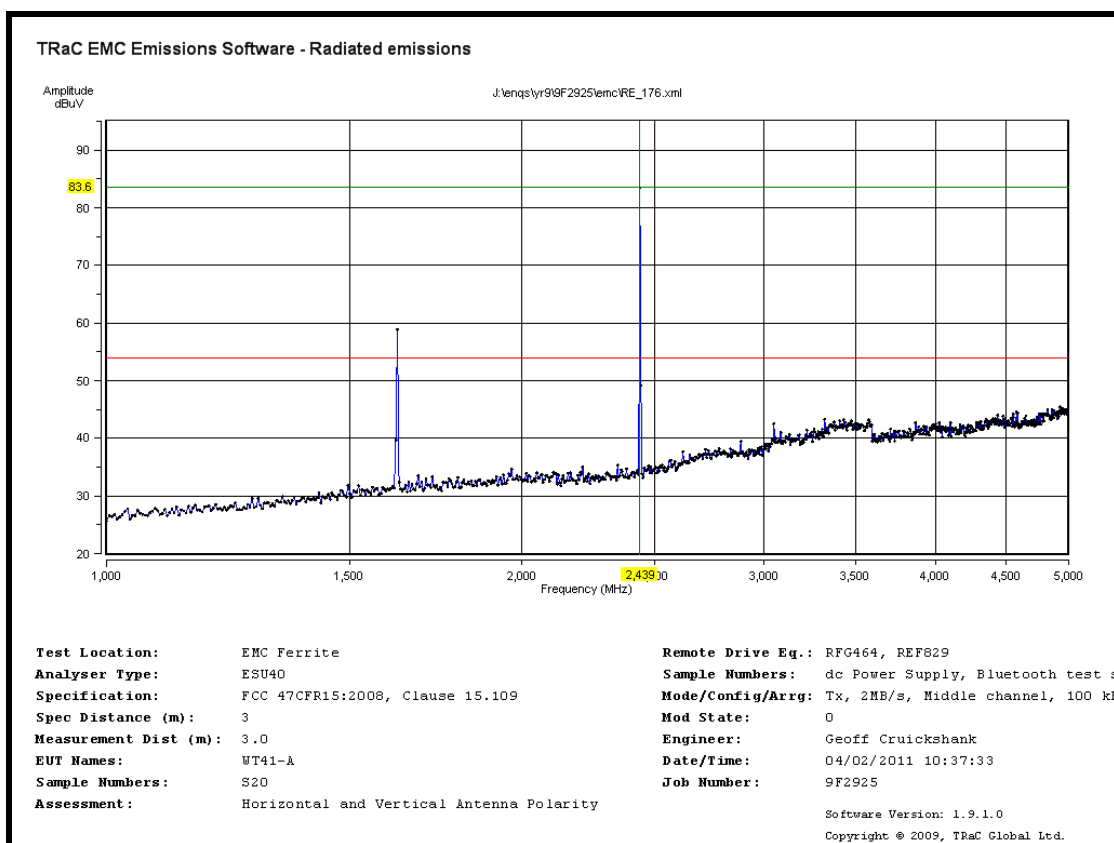
Radiated Spurious emissions 18 GHz to 25 GHz – 2402MHz – 2Mbps for S20



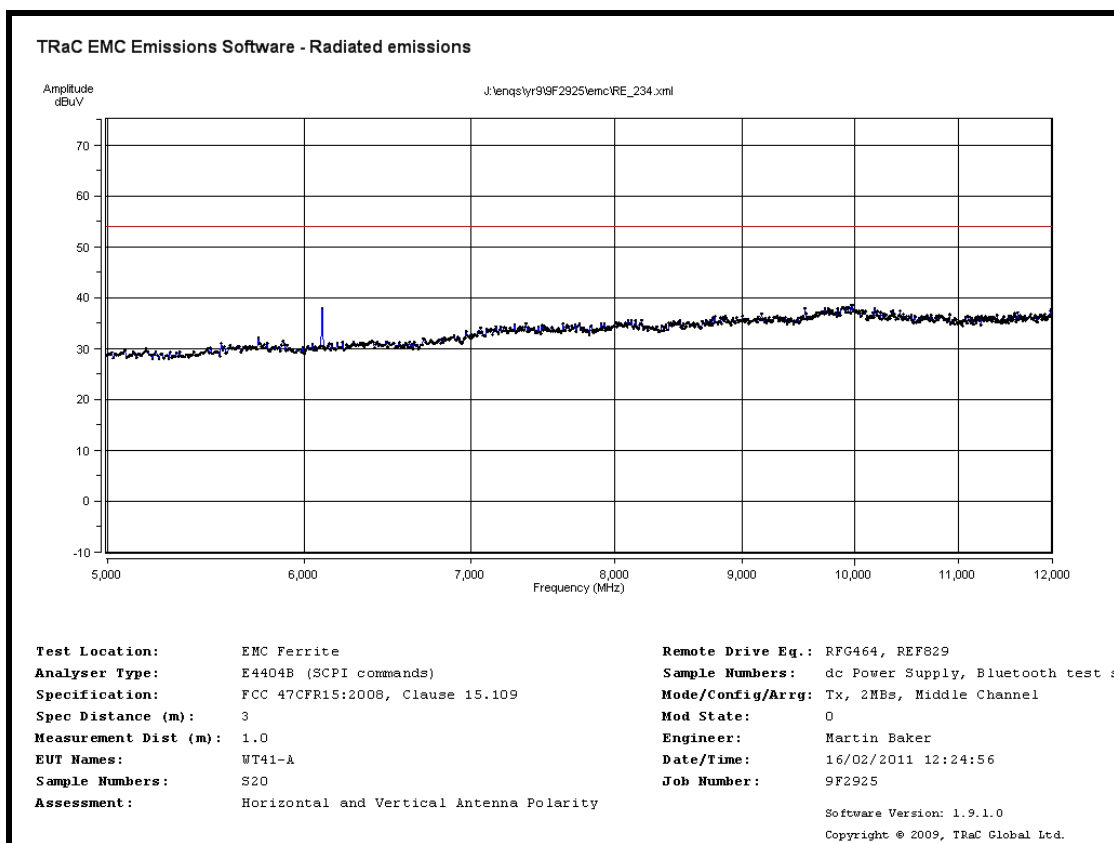
Radiated Spurious emissions 30 MHz to 200 MHz – 2441MHz – 2Mbps for S20



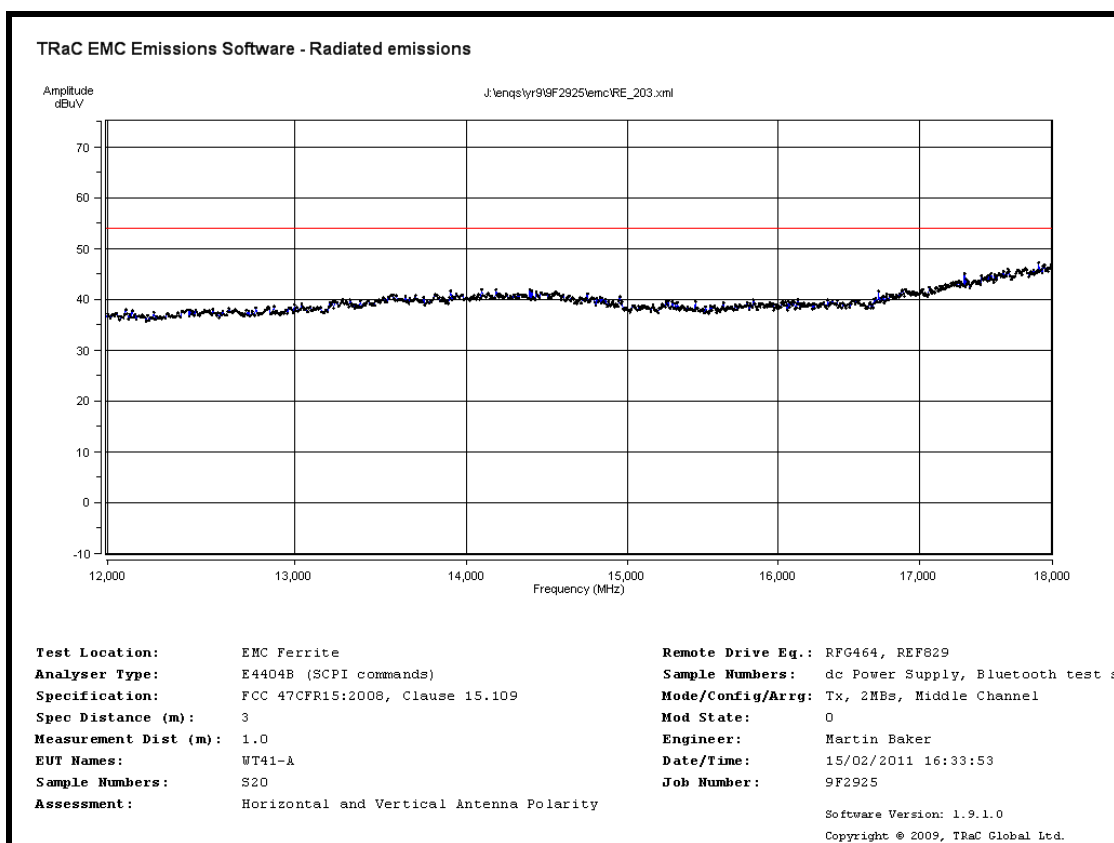
Radiated Spurious emissions 200 MHz to 1 GHz – 2441MHz – 2Mbps for S20



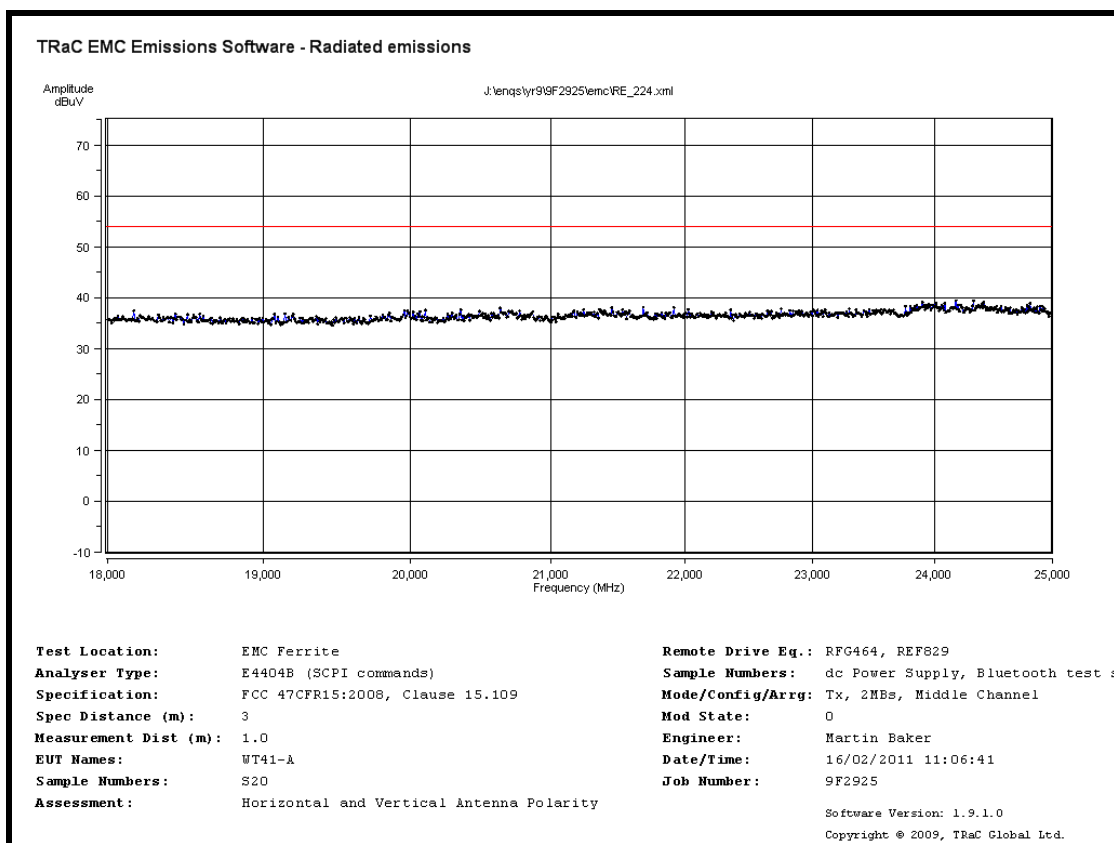
## Radiated Spurious emissions 1 GHz to 5 GHz – 2441MHz – 2Mbps for S20



## Radiated Spurious emissions 5 GHz to 12 GHz – 2441MHz – 2Mbps for S20

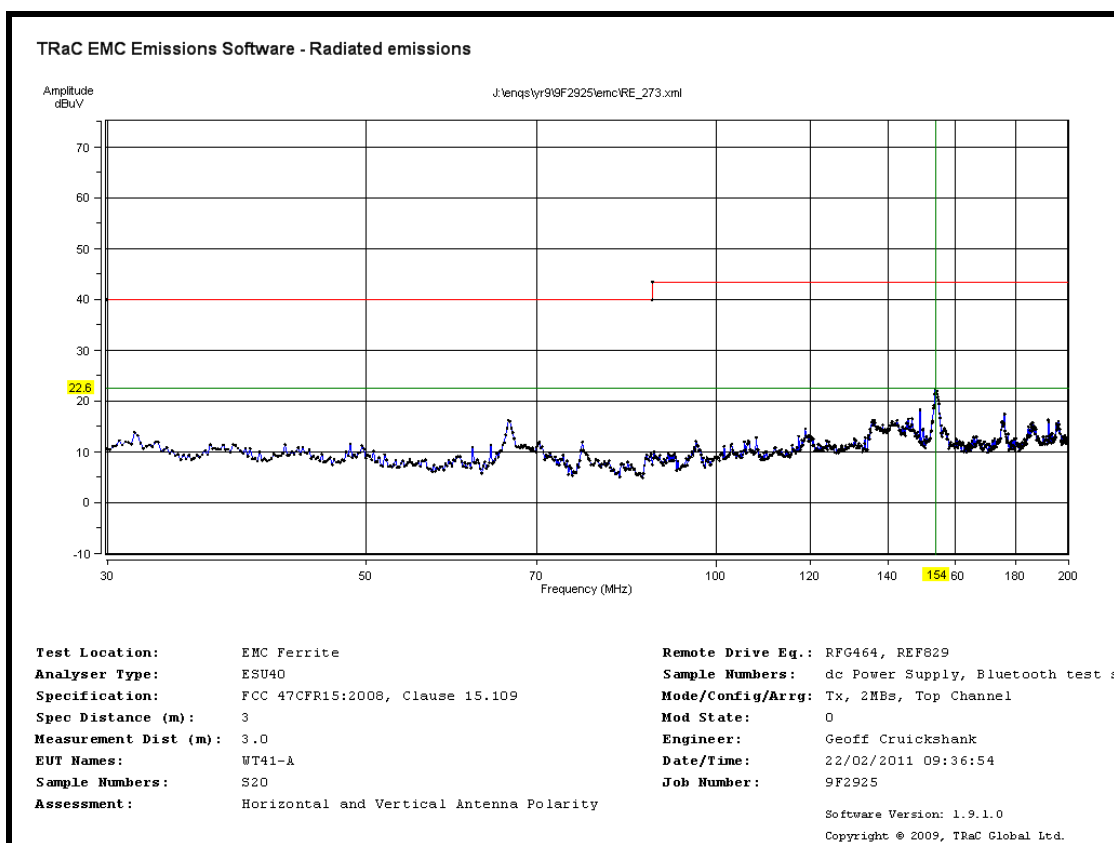


Radiated Spurious emissions 12 GHz to 18GHz – 2441MHz – 2Mbps for S20

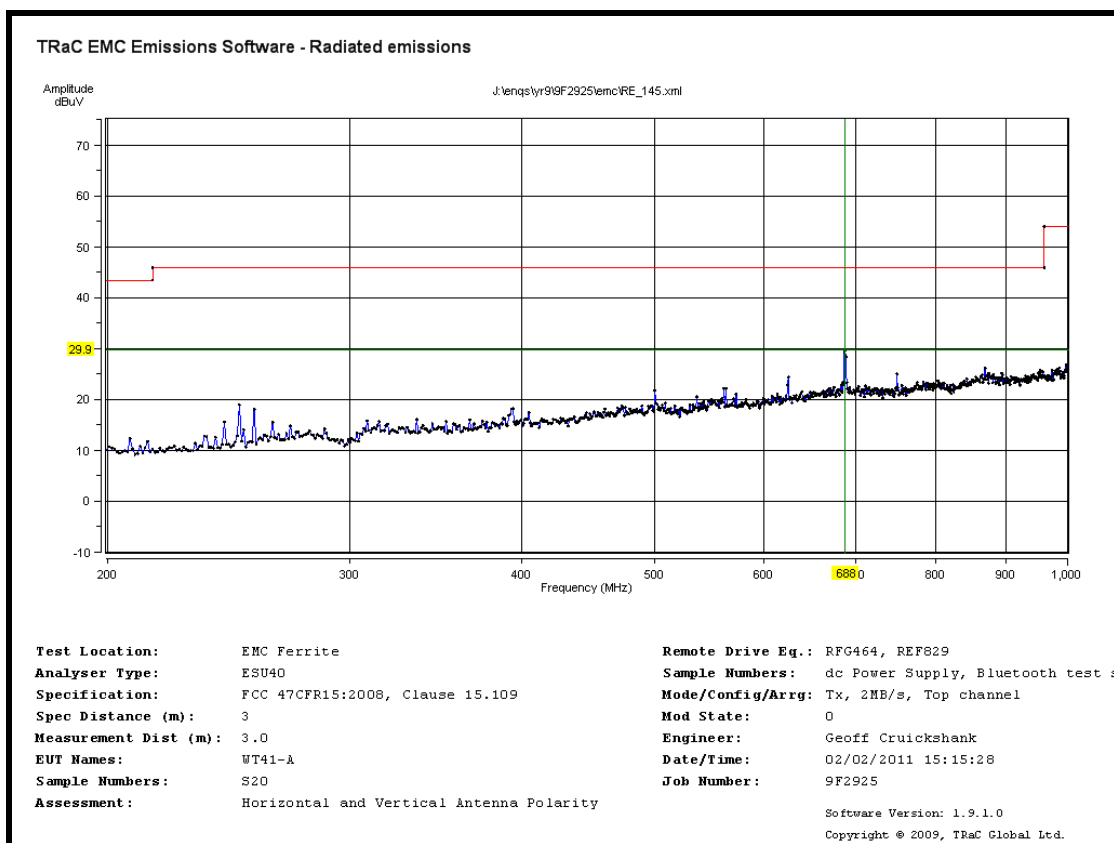


Radiated Spurious emissions 18 GHz to 25 GHz – 2441MHz – 2Mbps for S20

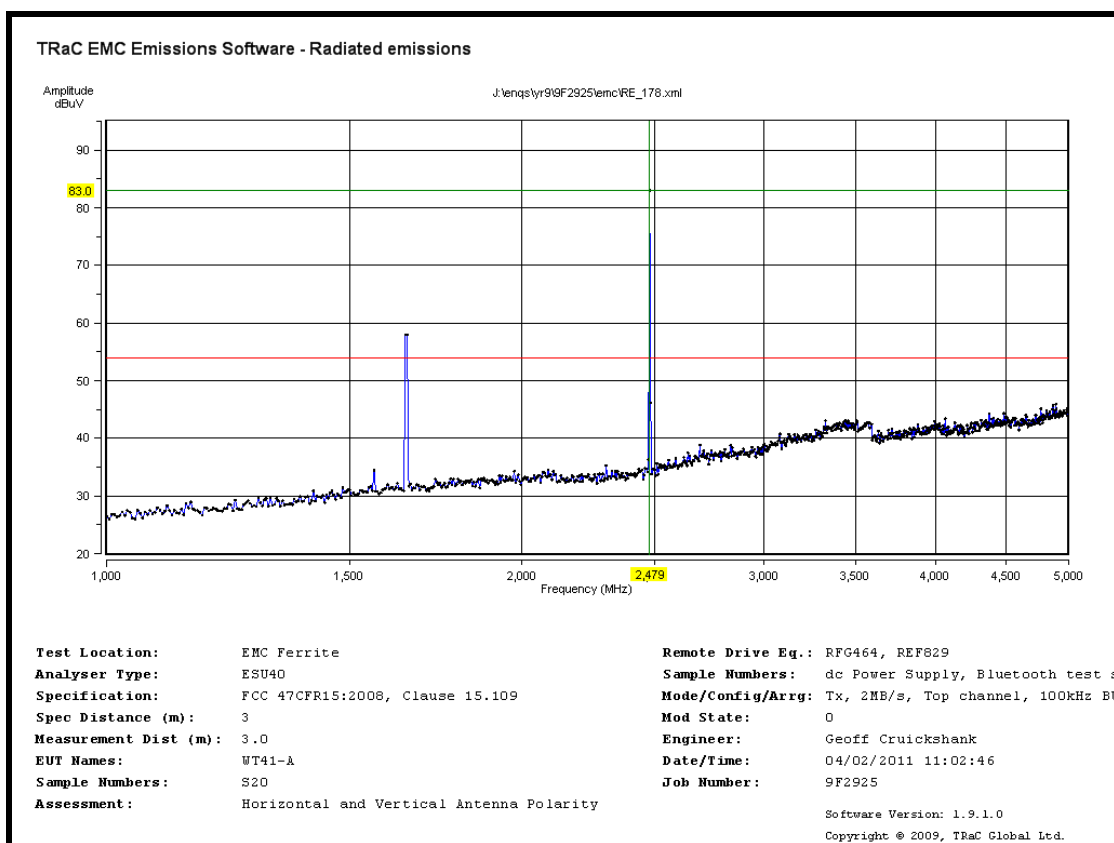




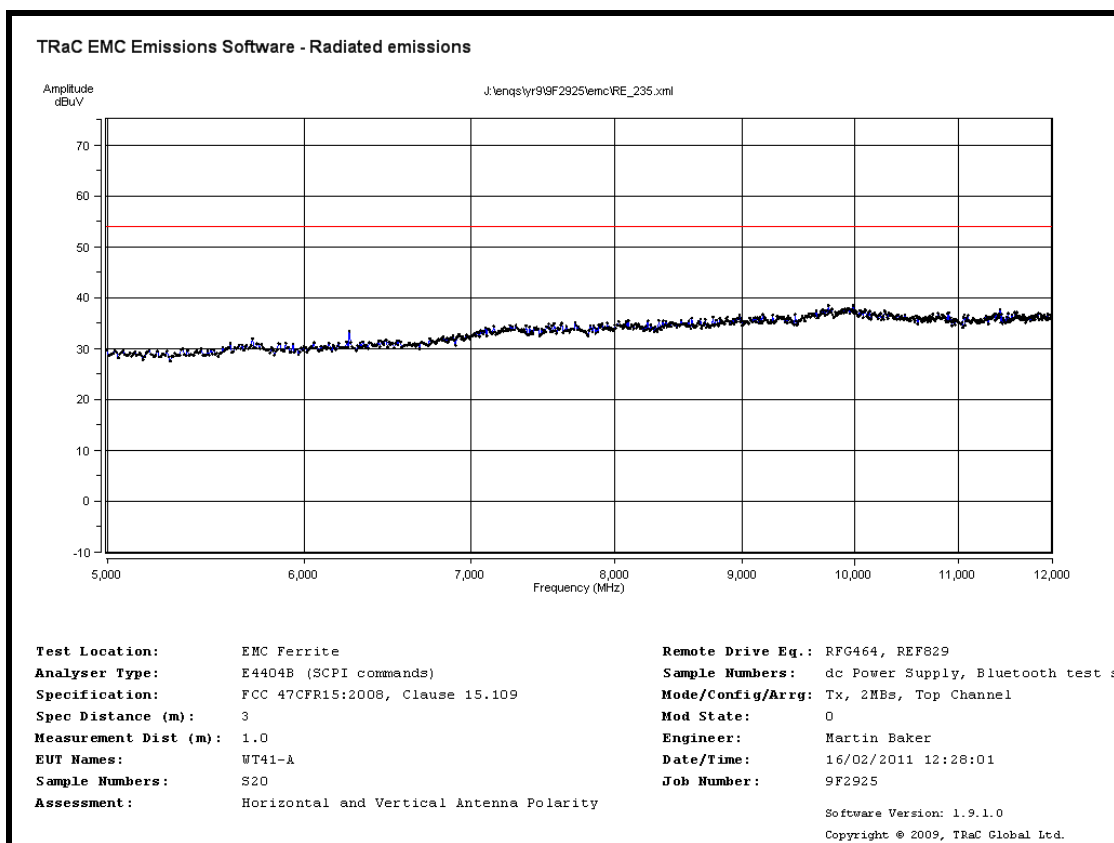
Radiated Spurious emissions 30 MHz to 200 MHz – 2480MHz – 2Mbps for S20



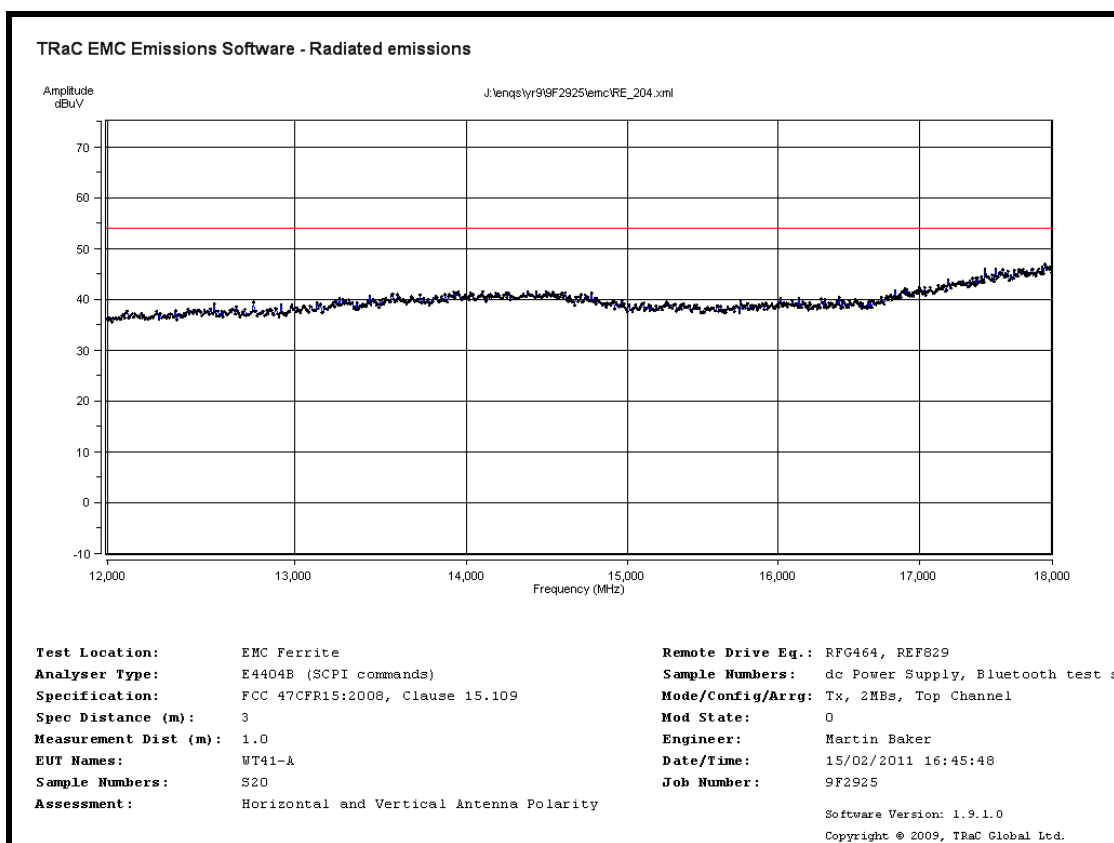
Radiated Spurious emissions 200 MHz to 1 GHz – 2480MHz – 2Mbps for S20



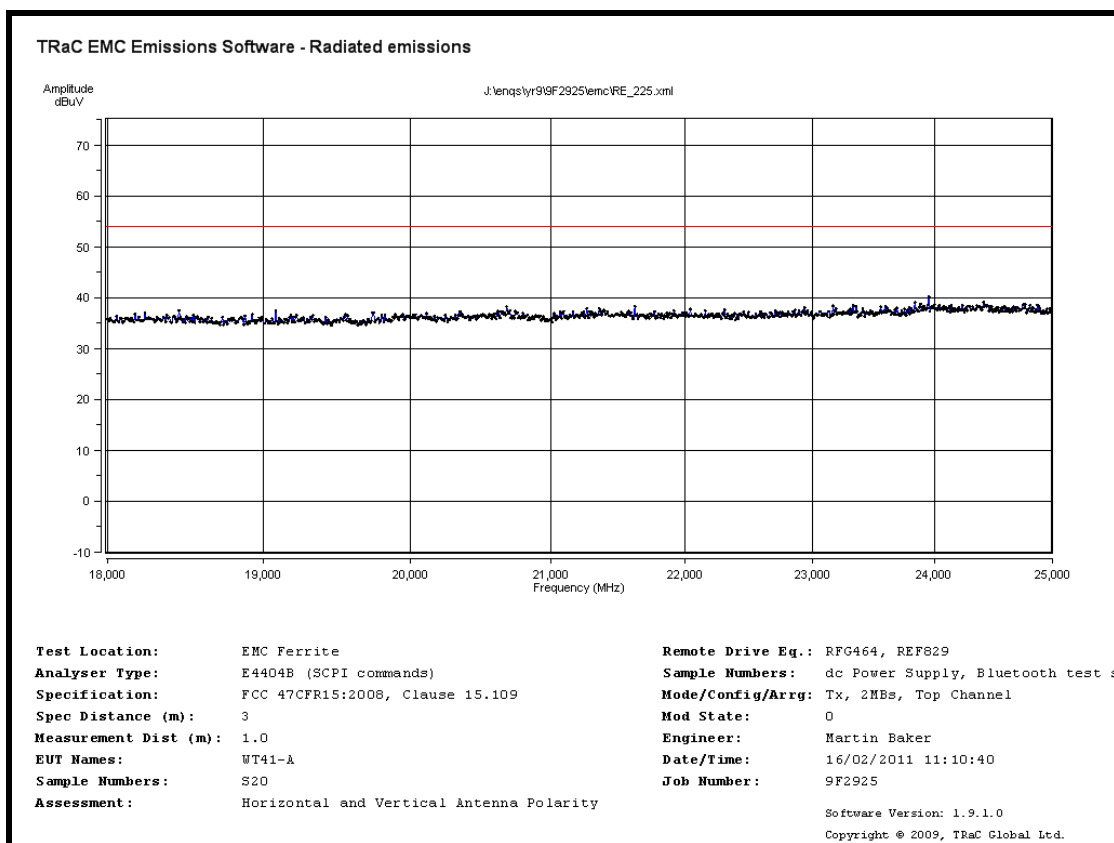
## Radiated Spurious emissions 1 GHz to 5 GHz – 2480MHz – 2Mbps for S20



## Radiated Spurious emissions 5 GHz to 12 GHz – 2480MHz – 2Mbps for S20

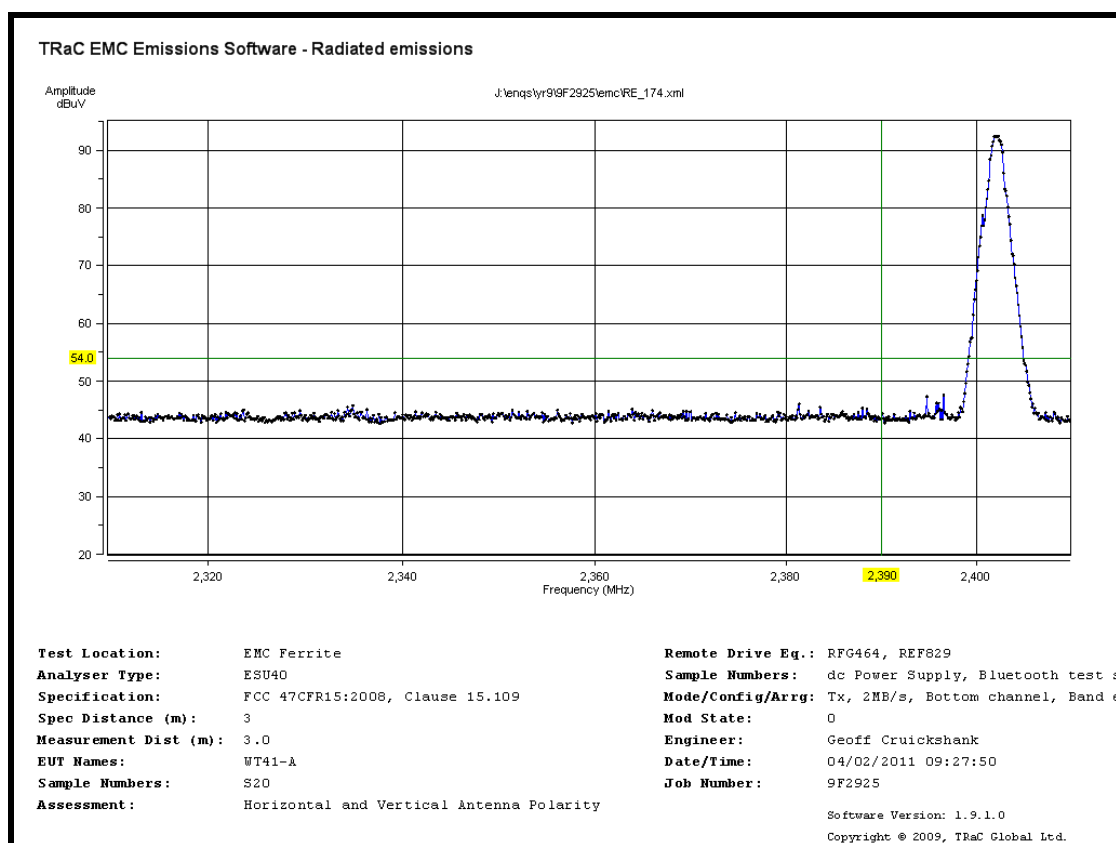


Radiated Spurious emissions 12 GHz to 18GHz – 2480MHz – 2Mbps for S20

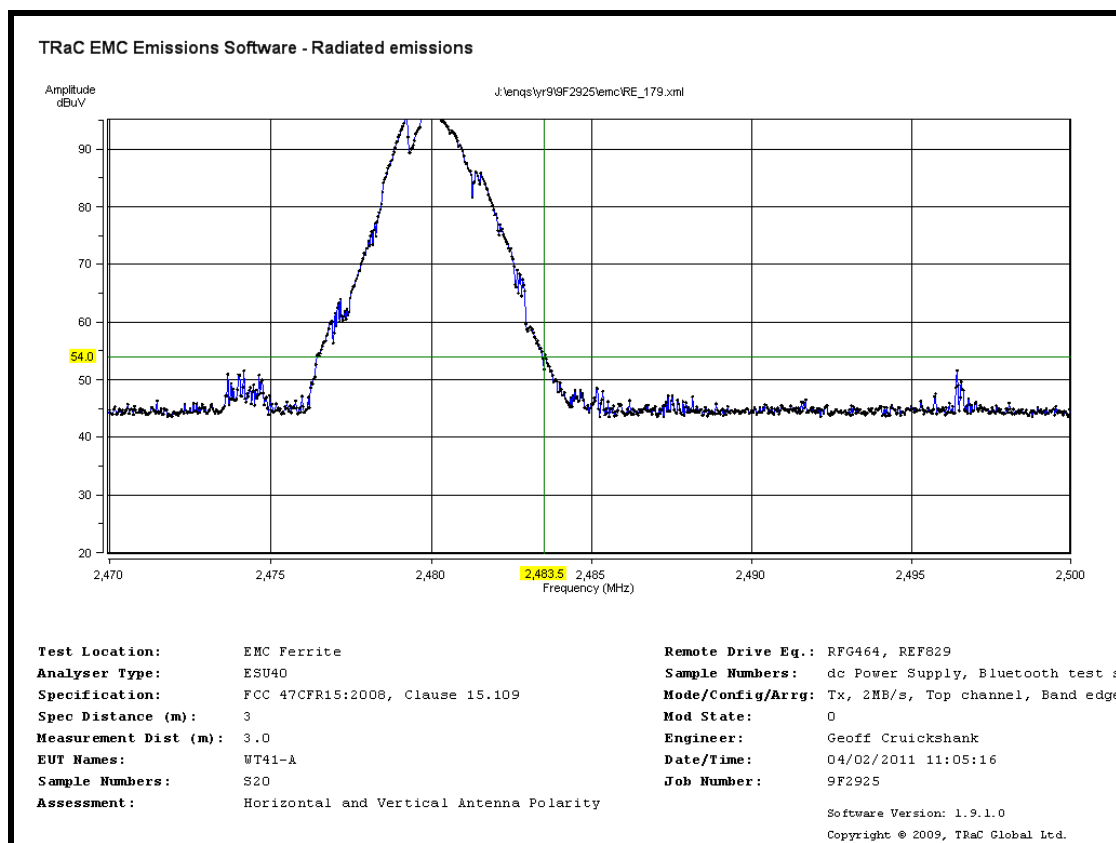


Radiated Spurious emissions 18 GHz to 25 GHz – 2480MHz – 2Mbps for S20

## Radiated Bandedge Compliance – Peak plot to average limit

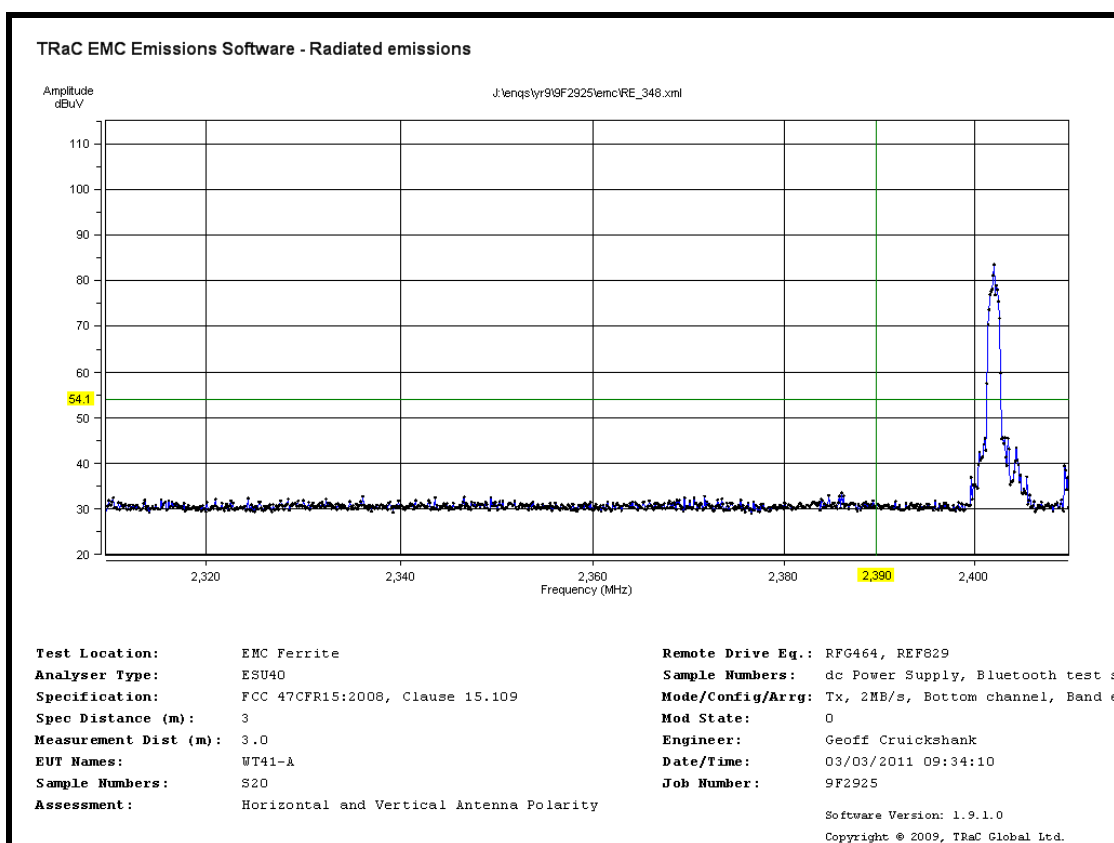


Lower Bandedge

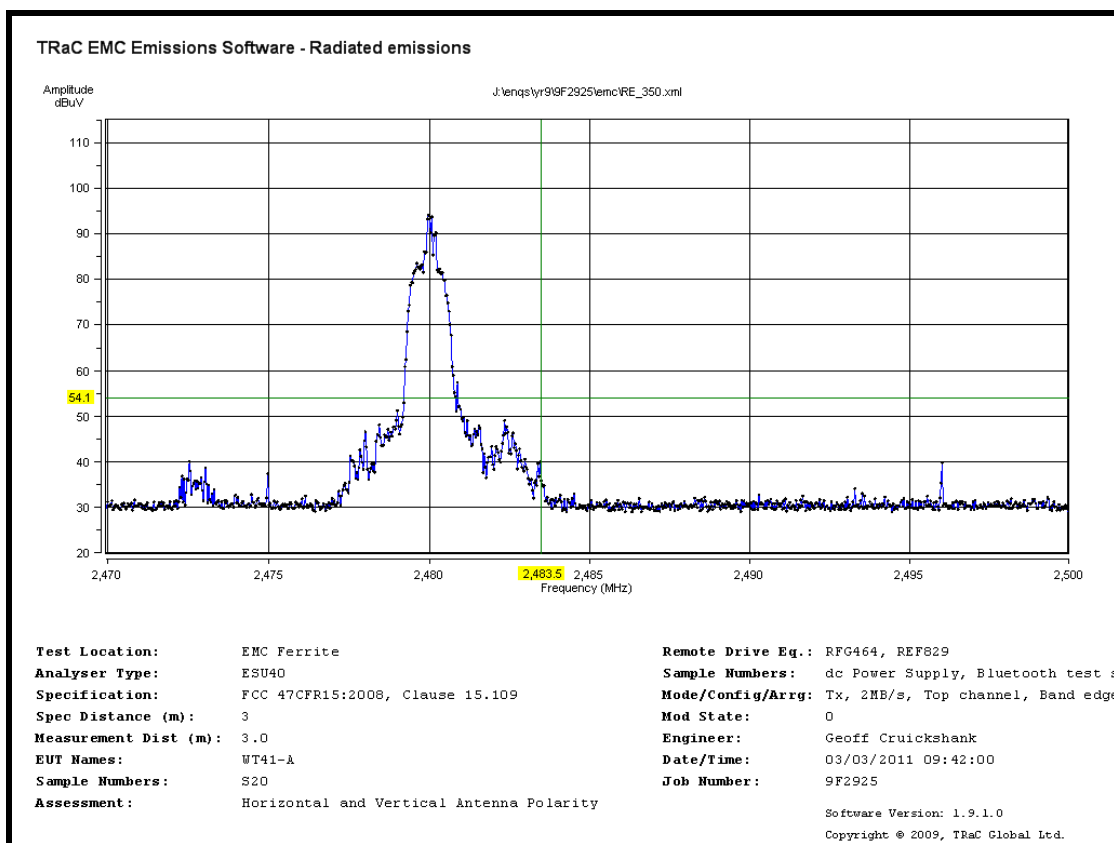


Upper Bandedge

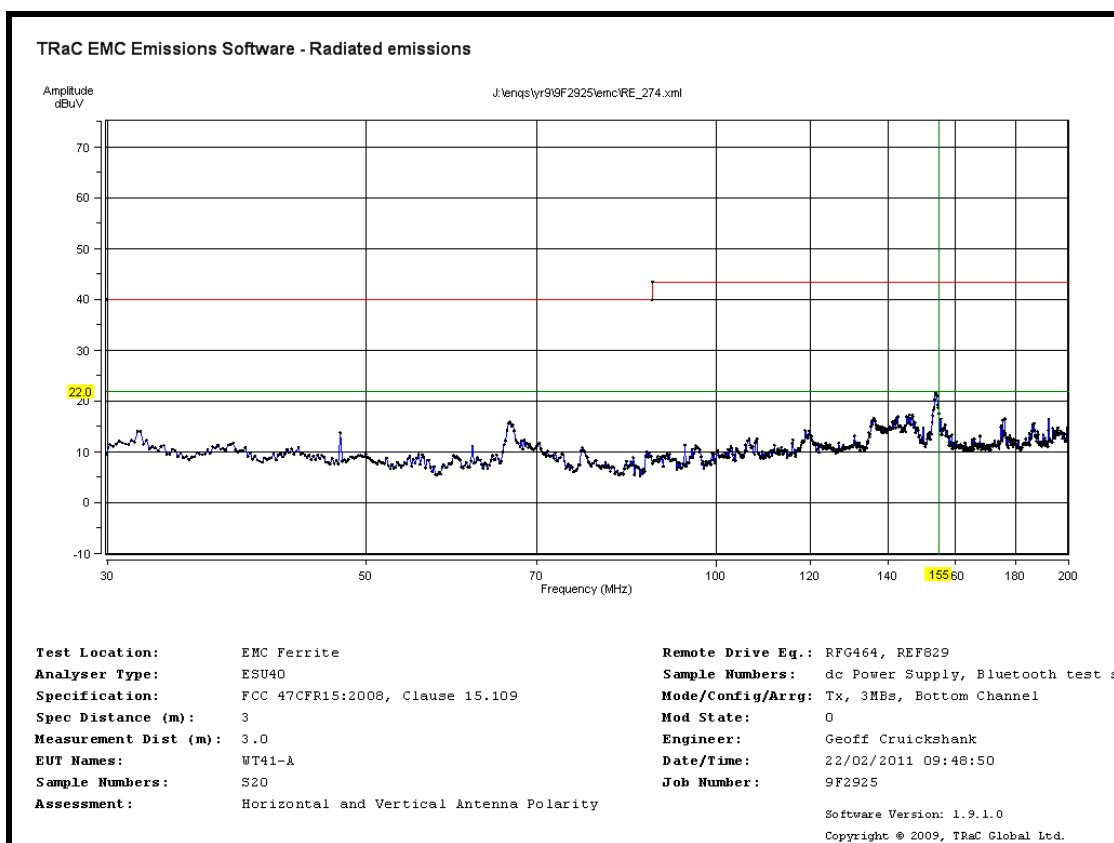
## Radiated Bandedge Compliance – Average plot to average limit



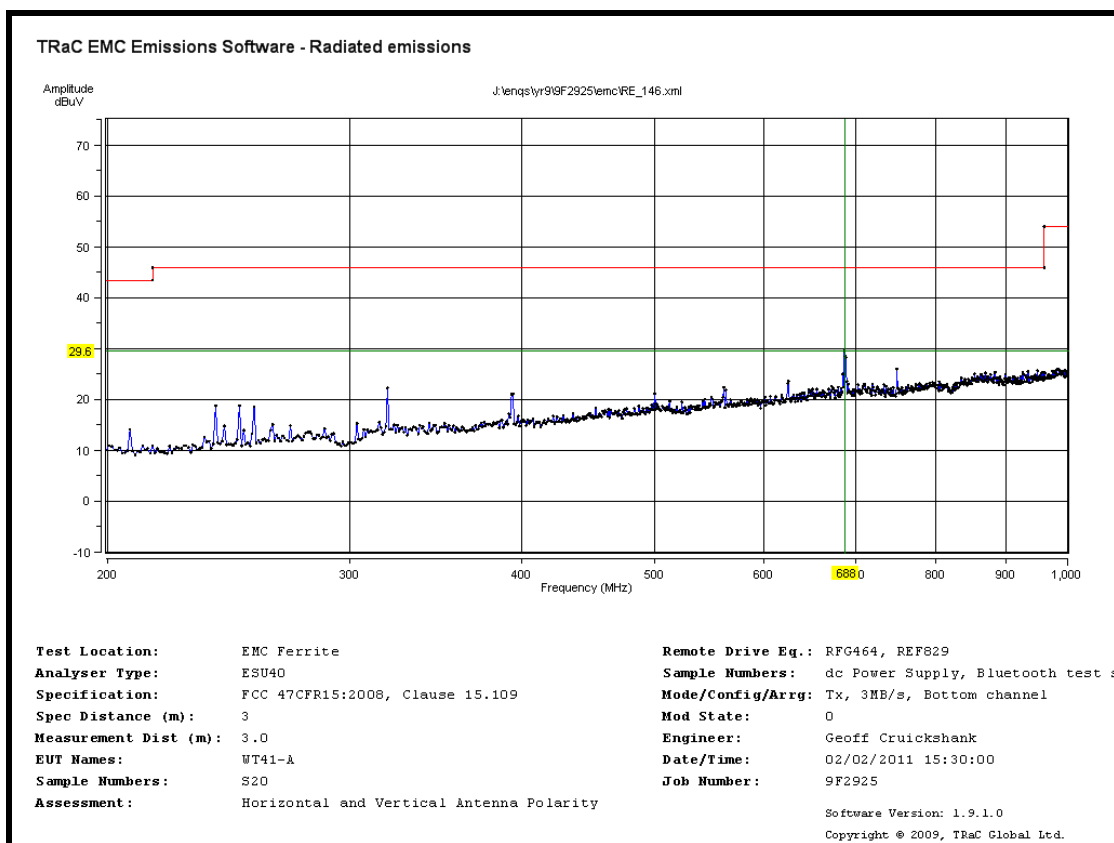
Lower Bandedge



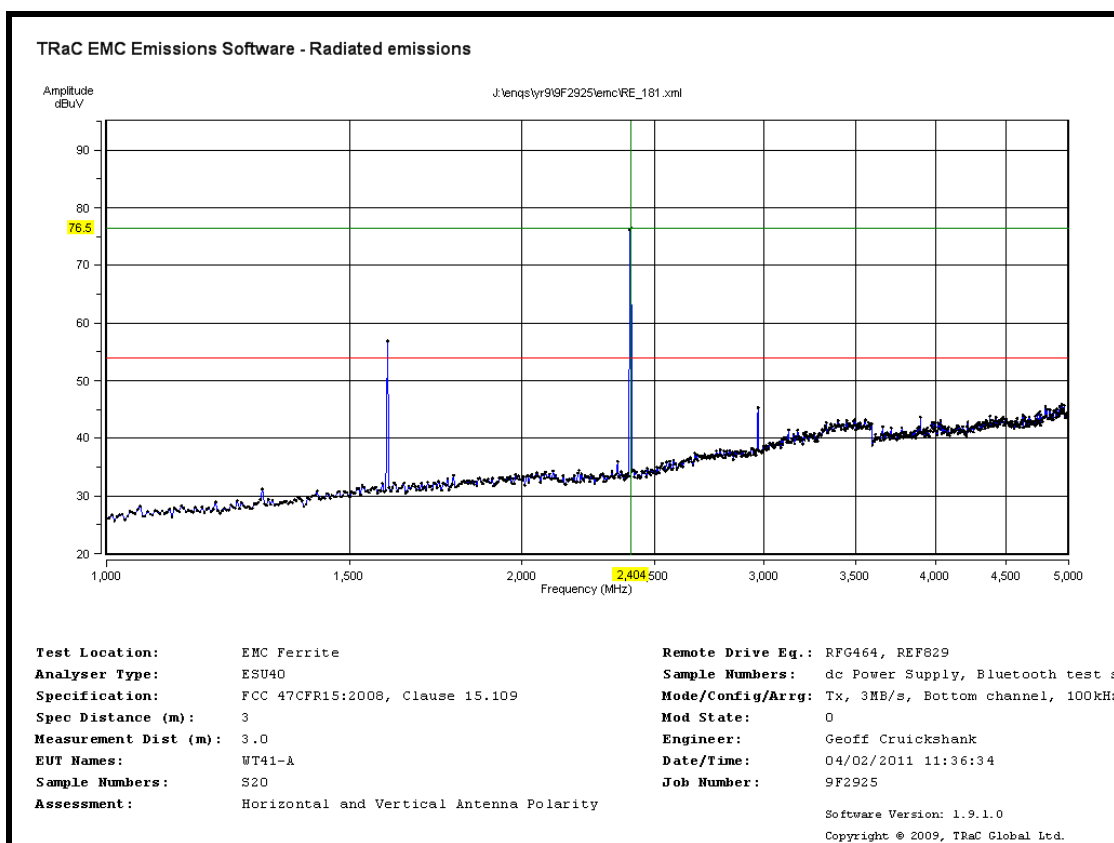
Upper Bandedge



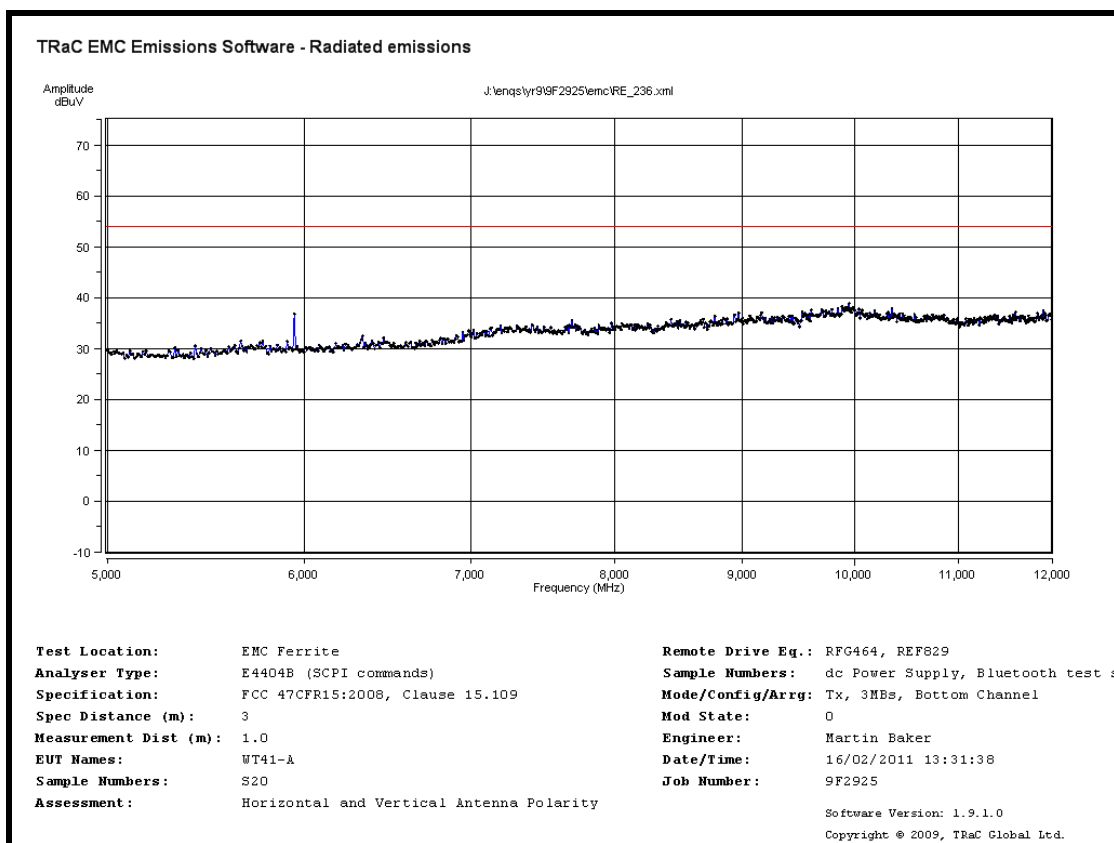
Radiated Spurious emissions 30 MHz to 200 MHz – 2402MHz – 3Mbps for S20



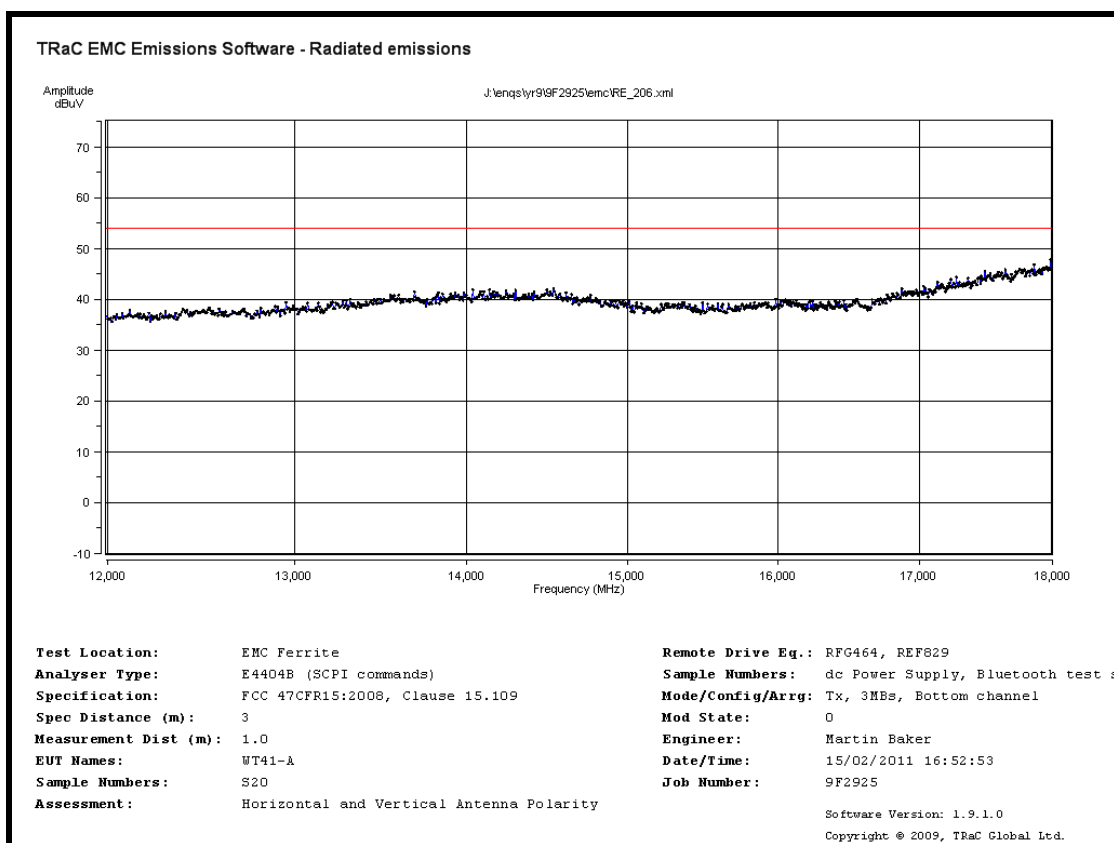
Radiated Spurious emissions 200 MHz to 1 GHz – 2402MHz – 3Mbps for S20



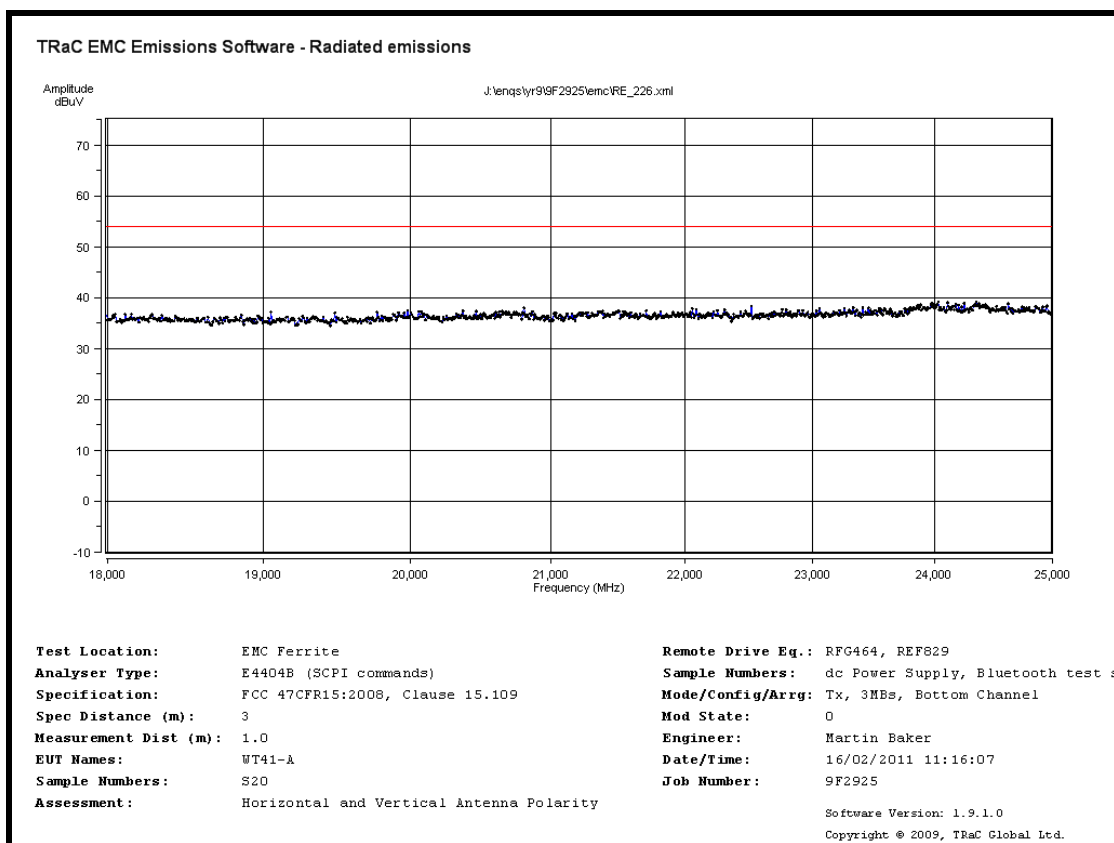
Radiated Spurious emissions 1 GHz to 5 GHz – 2402MHz – 3Mbps for S20



Radiated Spurious emissions 5 GHz to 12 GHz – 2402MHz – 3Mbps for S20

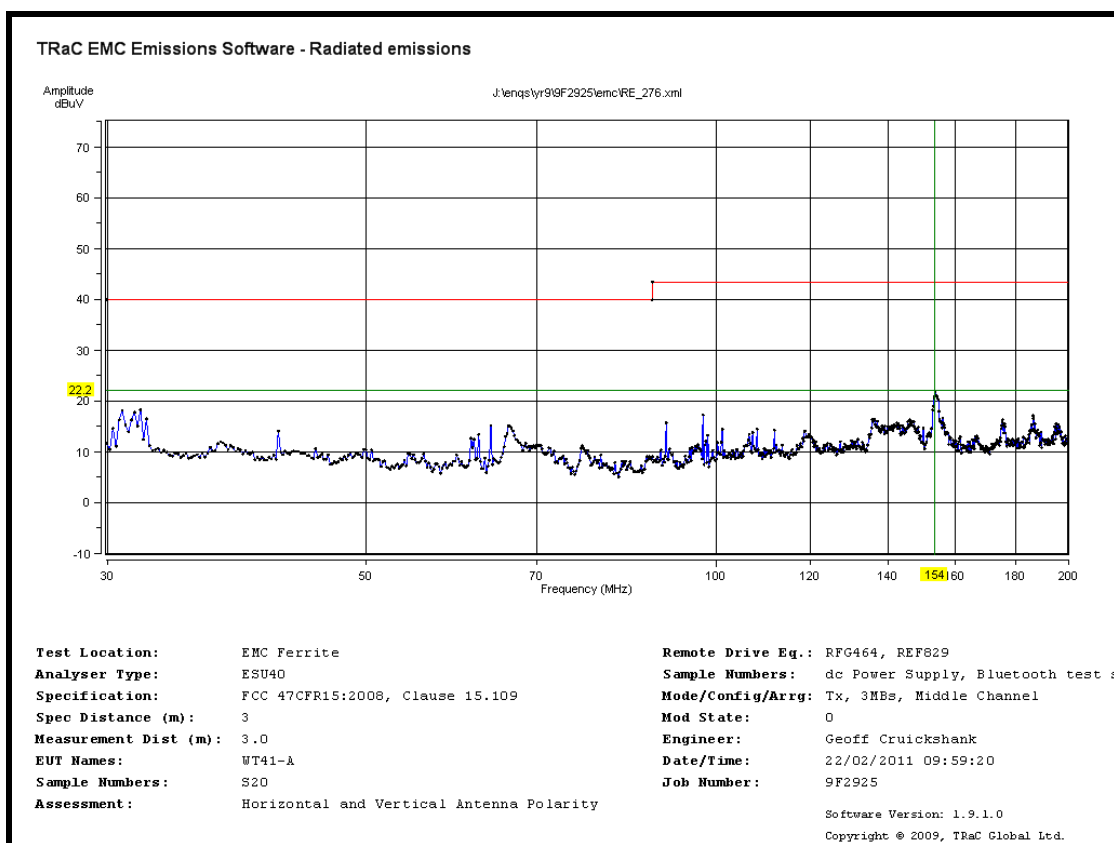


Radiated Spurious emissions 12 GHz to 18GHz – 2402MHz – 3Mbps for S20

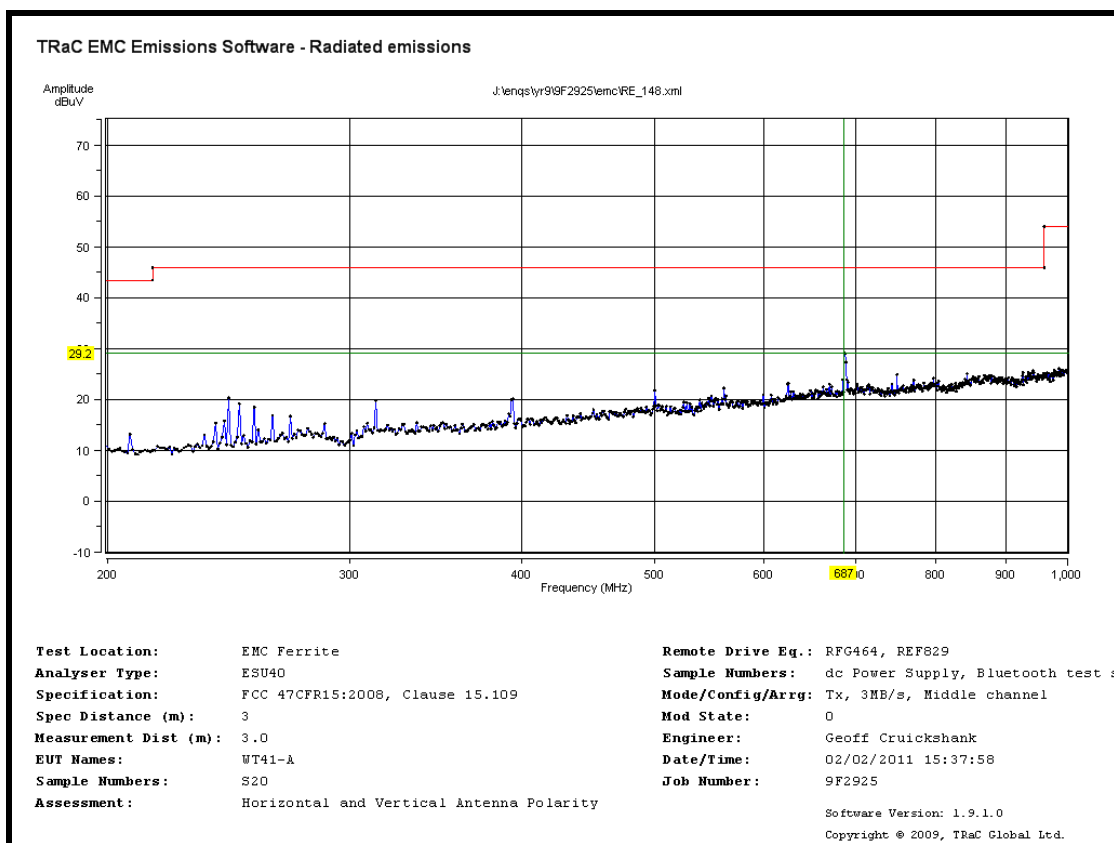


Radiated Spurious emissions 18 GHz to 25 GHz – 2402MHz – 3Mbps for S20

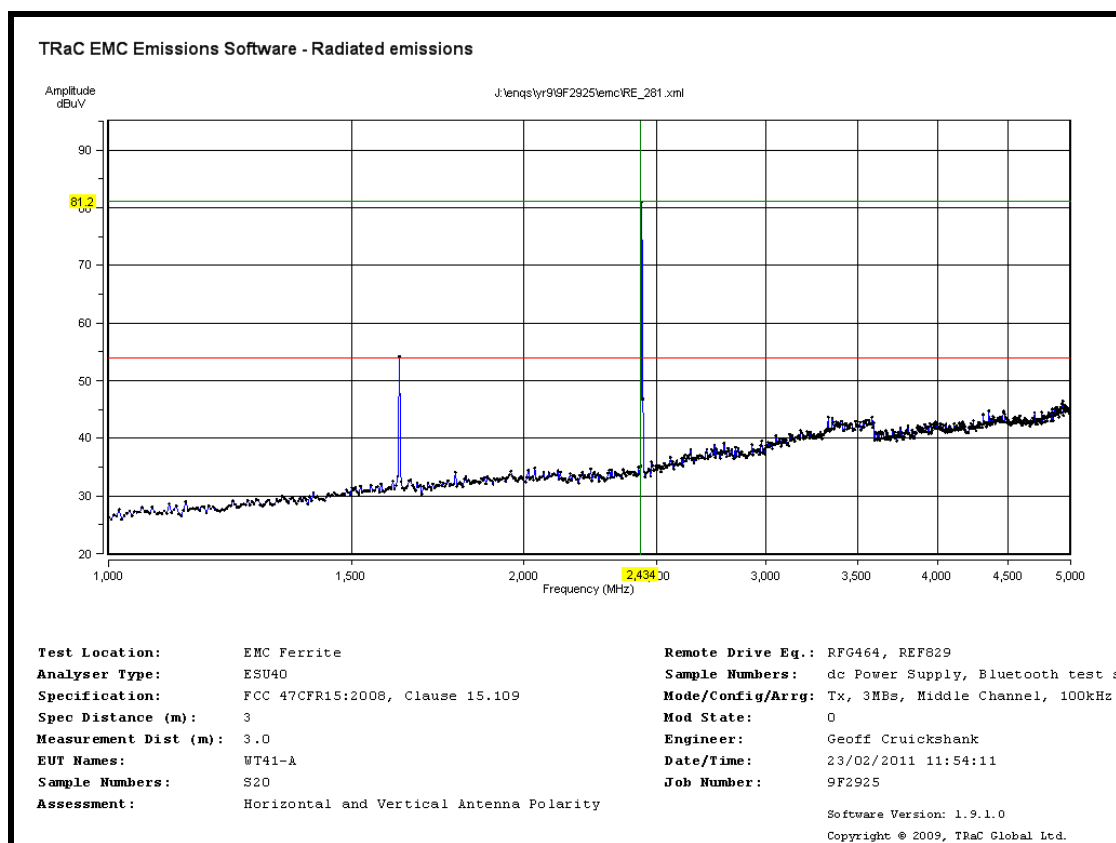




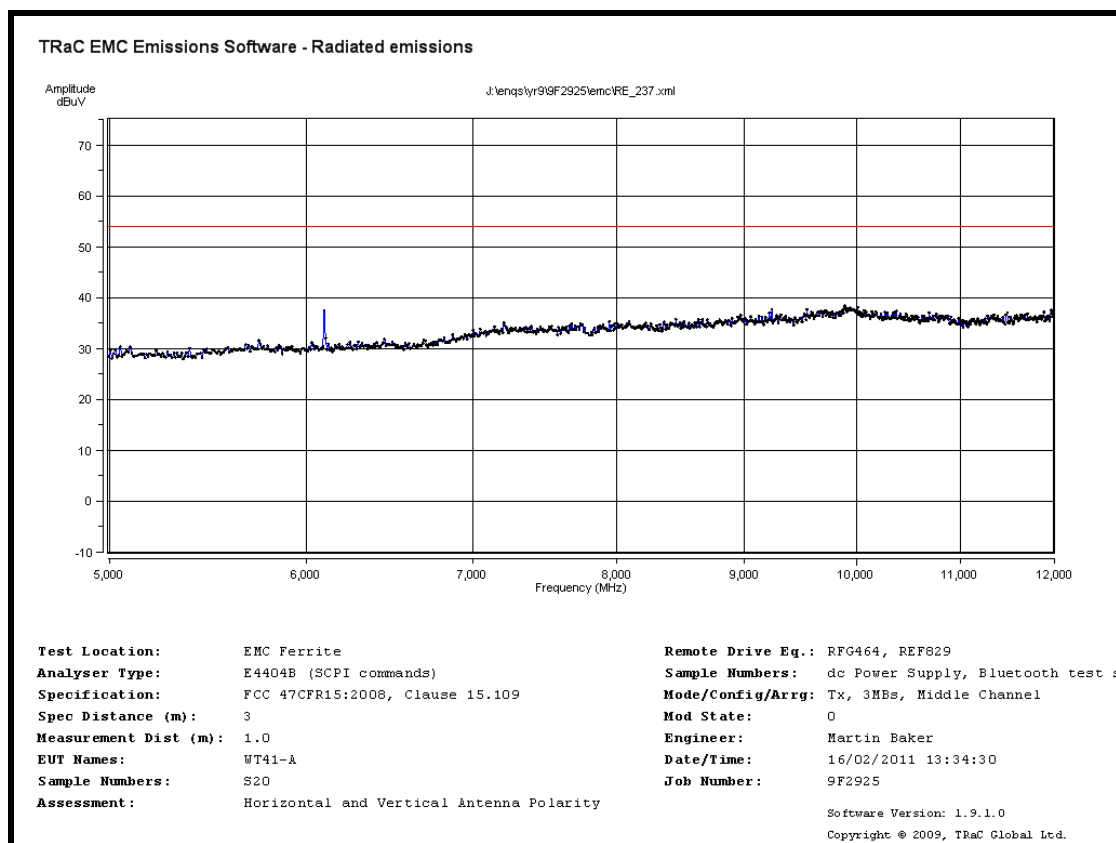
Radiated Spurious emissions 30 MHz to 200 MHz – 2441MHz – 3Mbps for S20



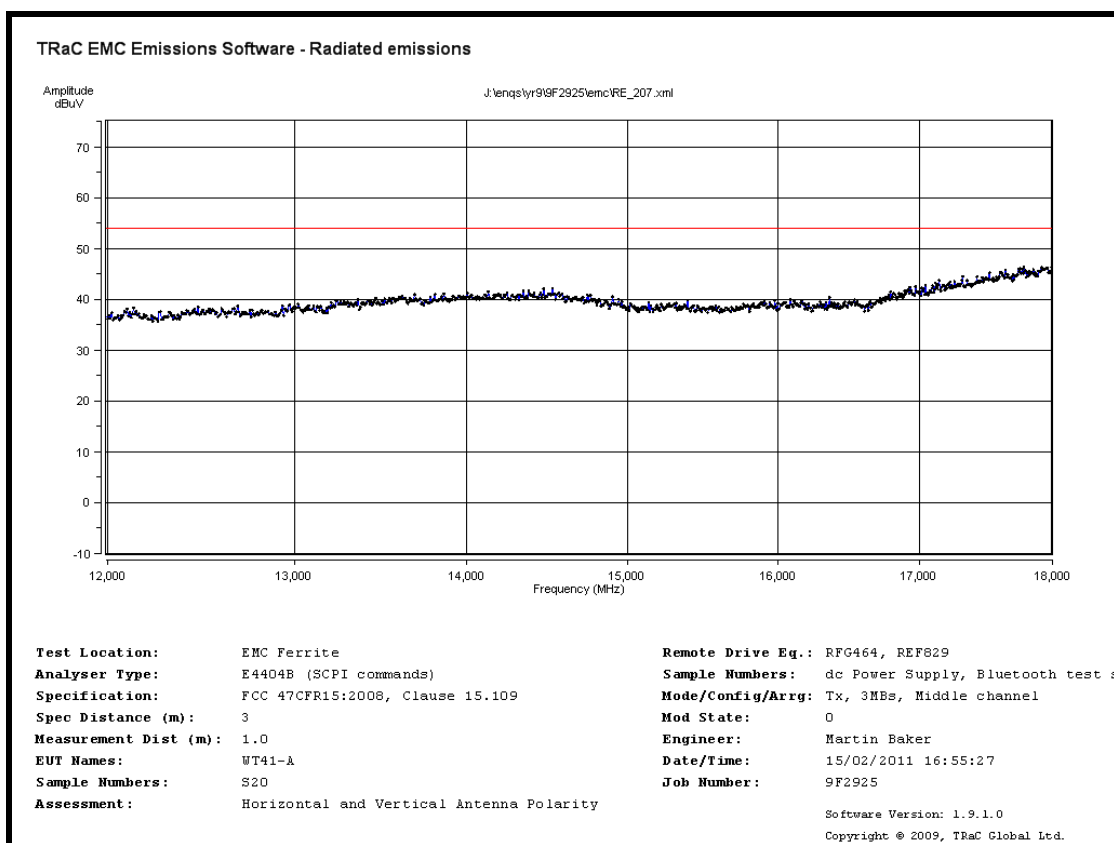
Radiated Spurious emissions 200 MHz to 1 GHz – 2441MHz – 3Mbps for S20



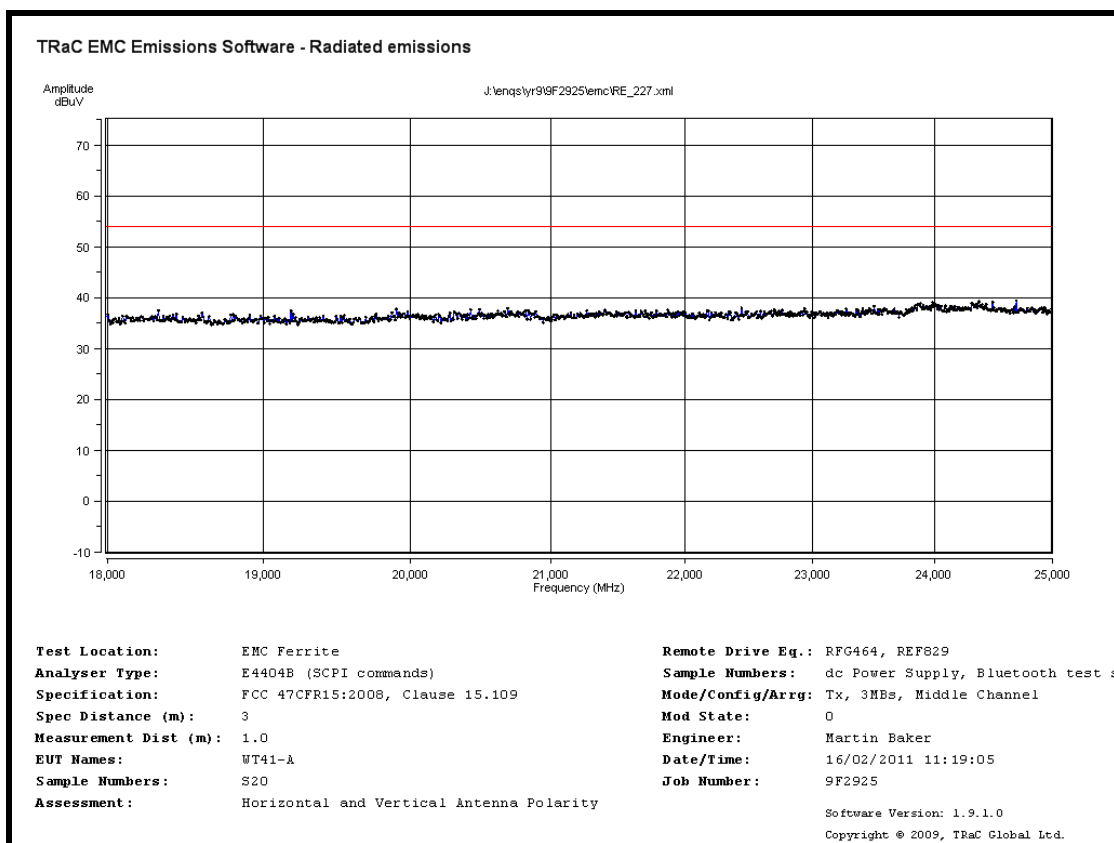
## Radiated Spurious emissions 1 GHz to 5 GHz – 2441MHz – 3Mbps for S20



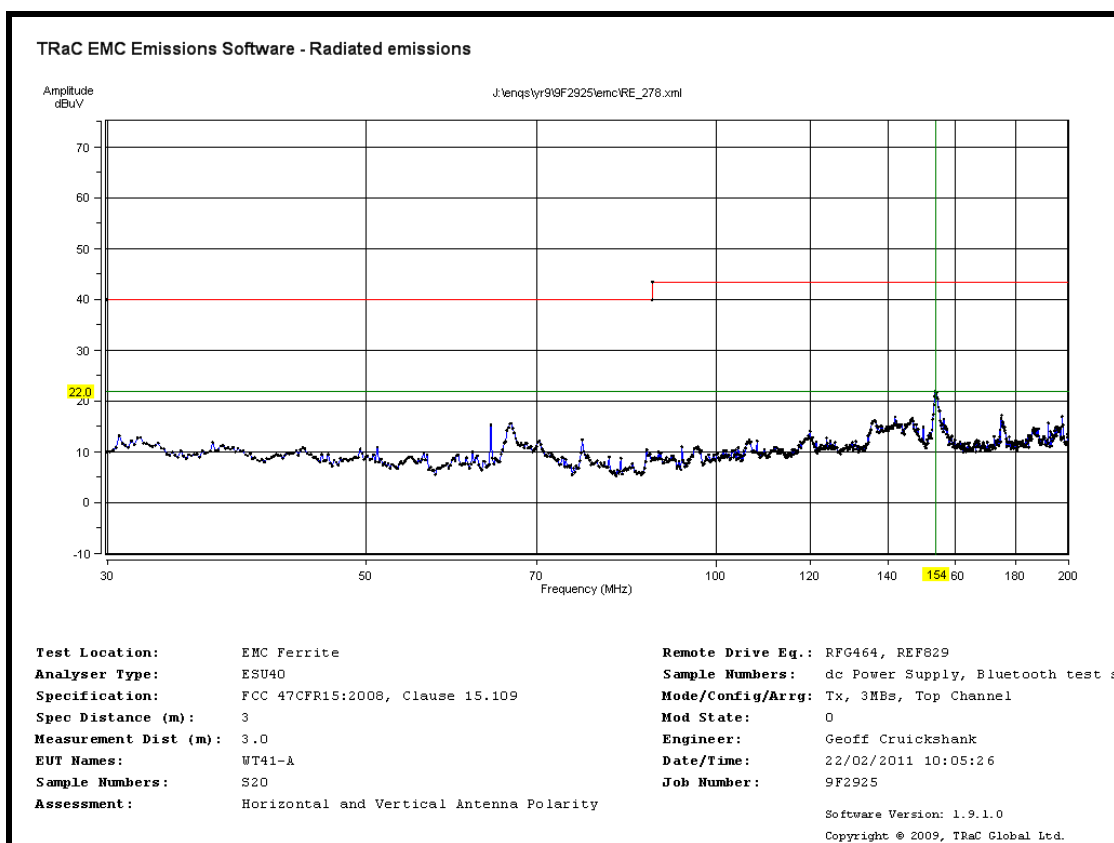
## Radiated Spurious emissions 5 GHz to 12 GHz – 2441MHz – 3Mbps for S20



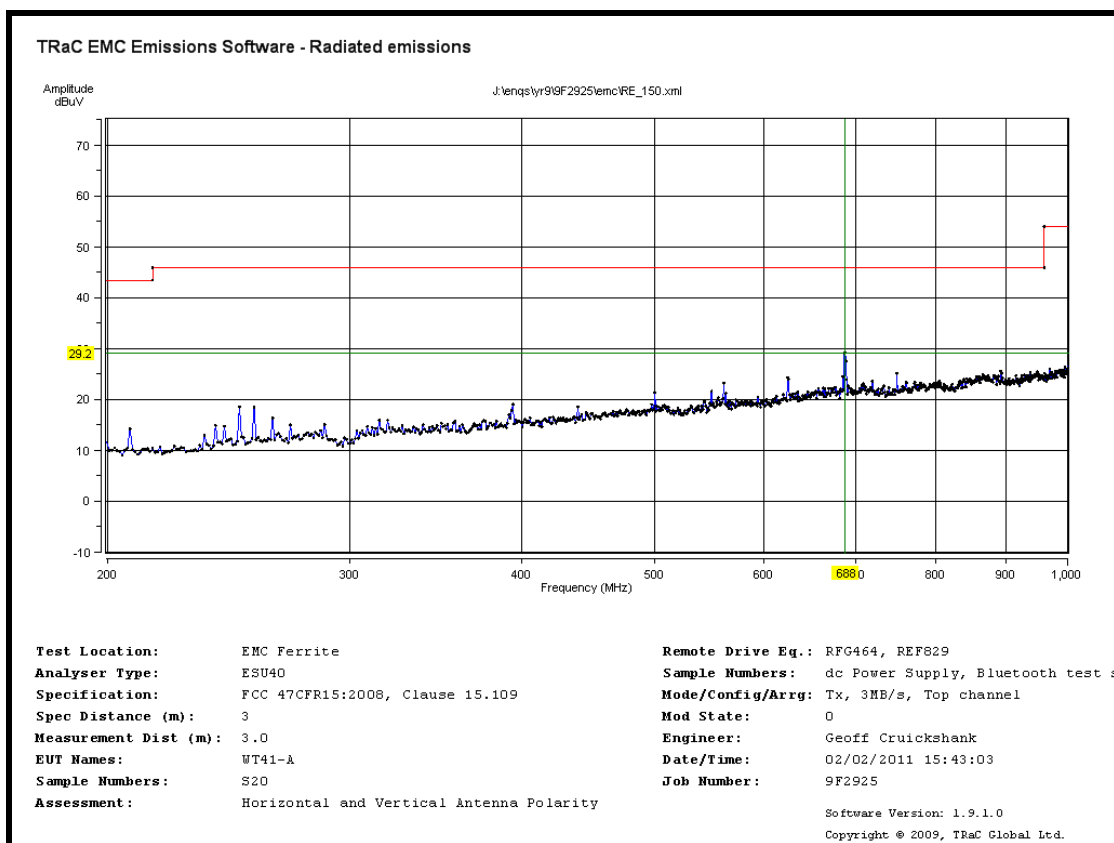
Radiated Spurious emissions 12 GHz to 18GHz – 2441MHz – 3Mbps for S20



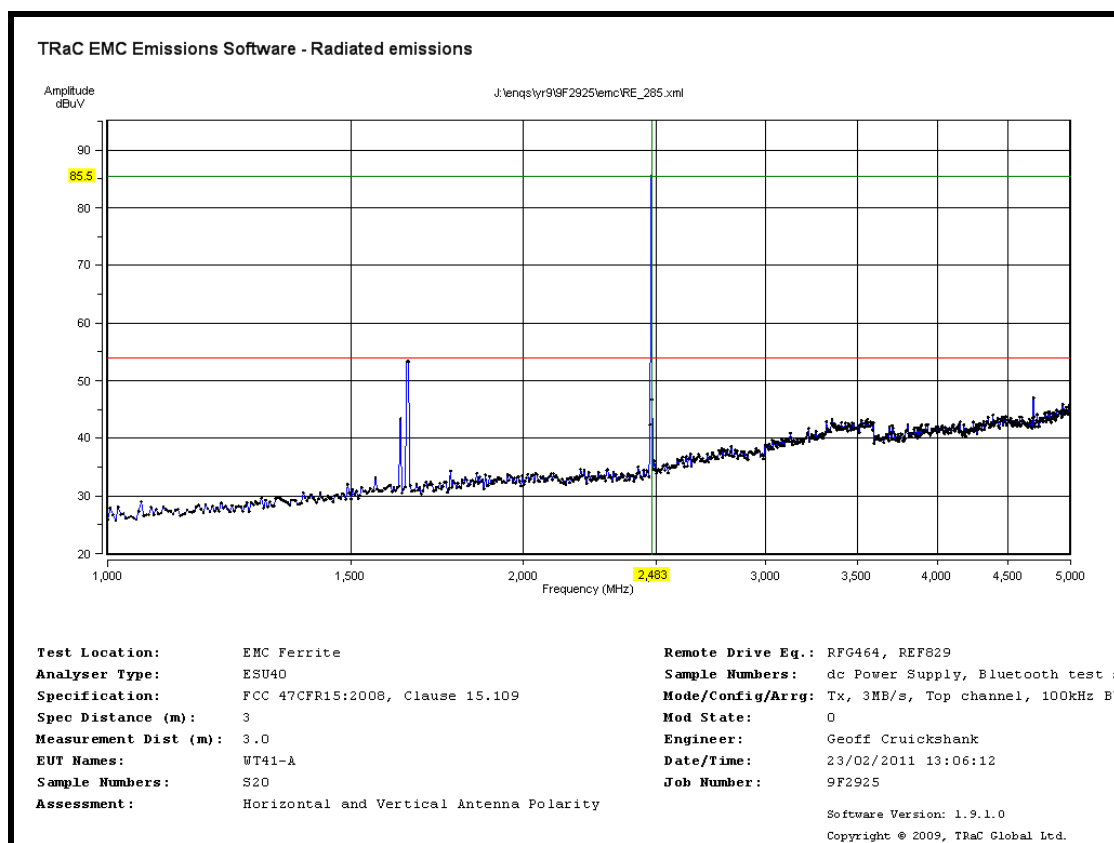
Radiated Spurious emissions 18 GHz to 25 GHz – 2441MHz – 3Mbps for S20



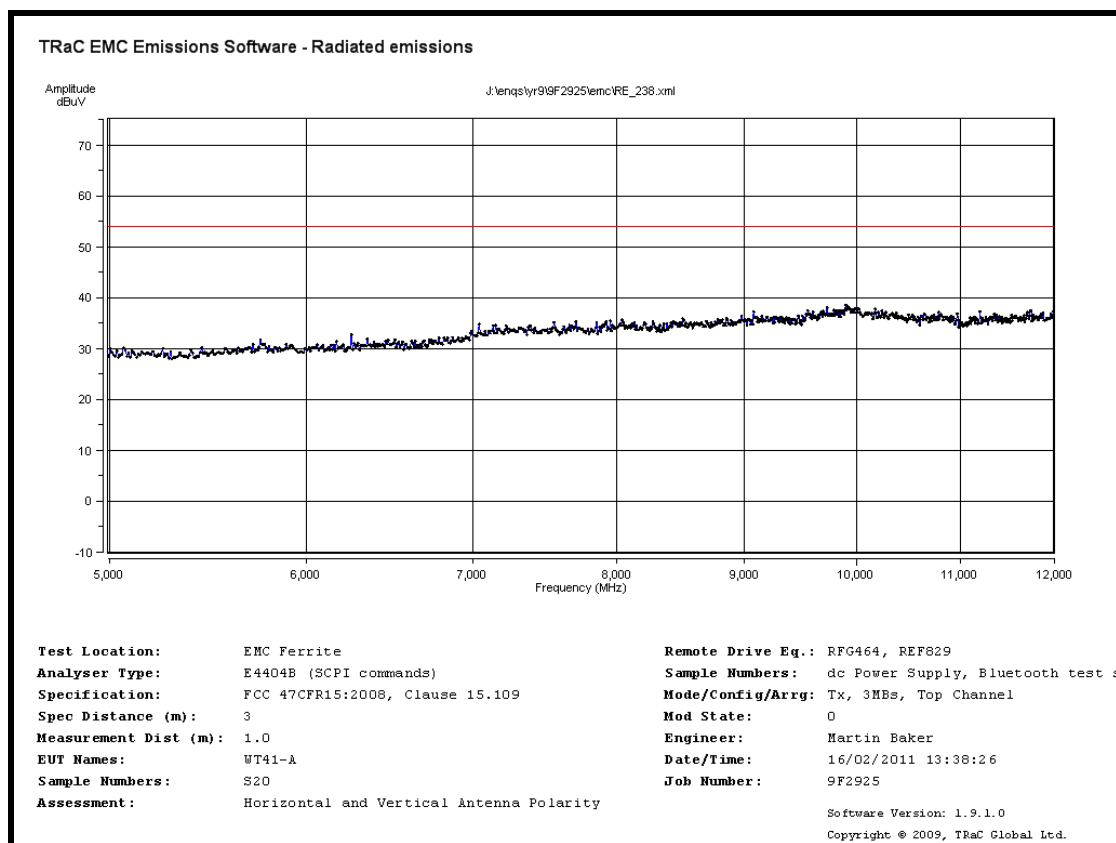
Radiated Spurious emissions 30 MHz to 200 MHz – 2480MHz – 3Mbps for S20



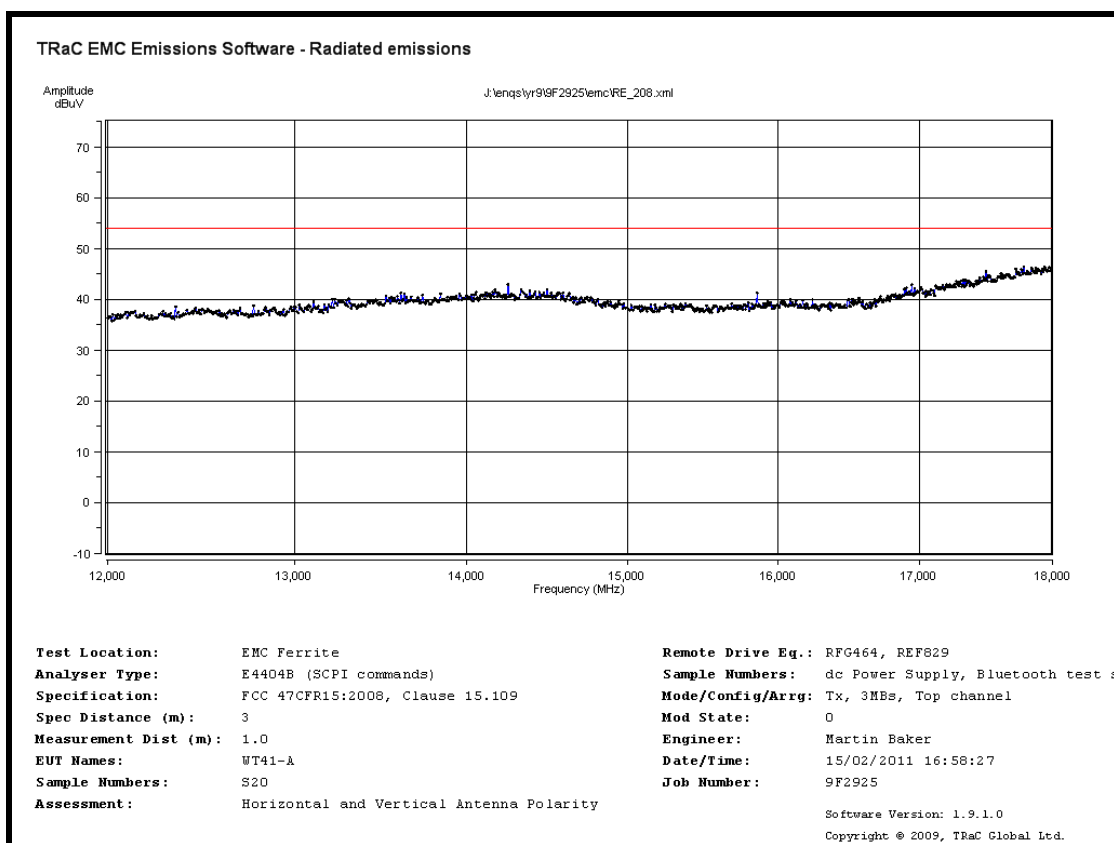
Radiated Spurious emissions 200 MHz to 1 GHz – 2480MHz – 3Mbps for S20



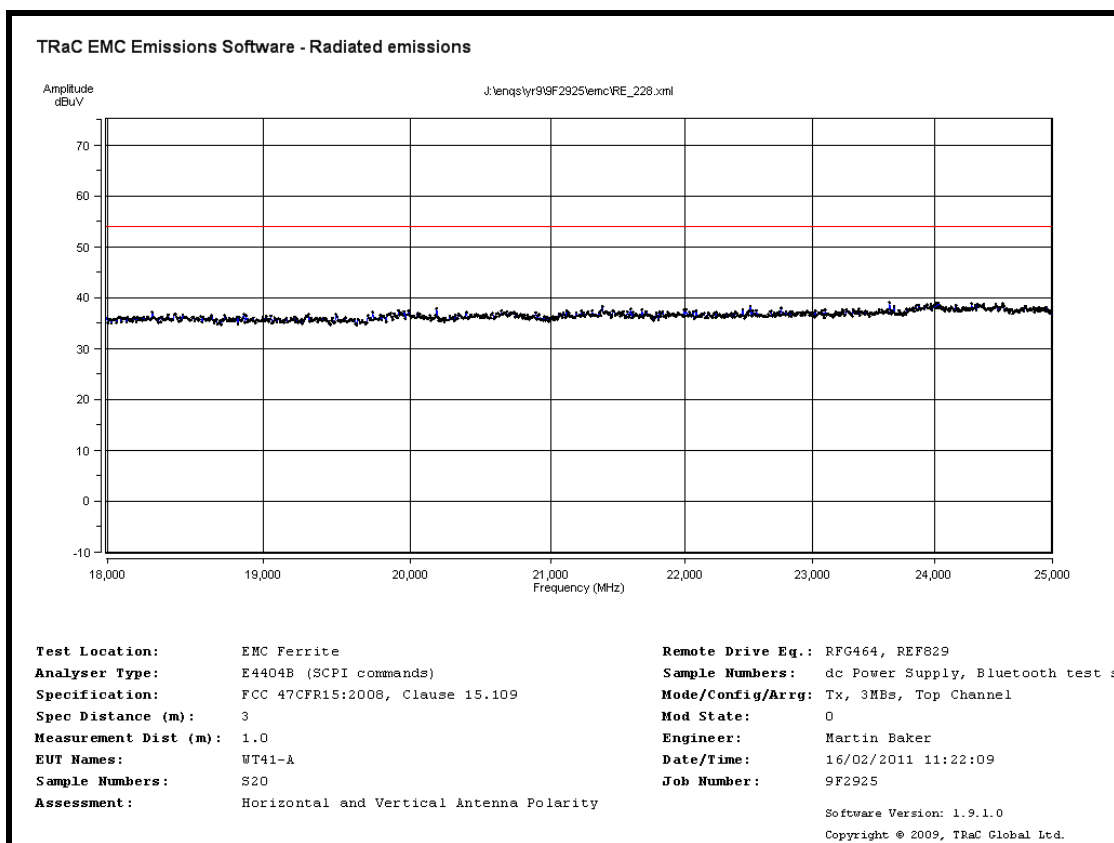
Radiated Spurious emissions 1 GHz to 5 GHz – 2480MHz – 3Mbps for S20



Radiated Spurious emissions 5 GHz to 12 GHz – 2480MHz – 3Mbps for S20

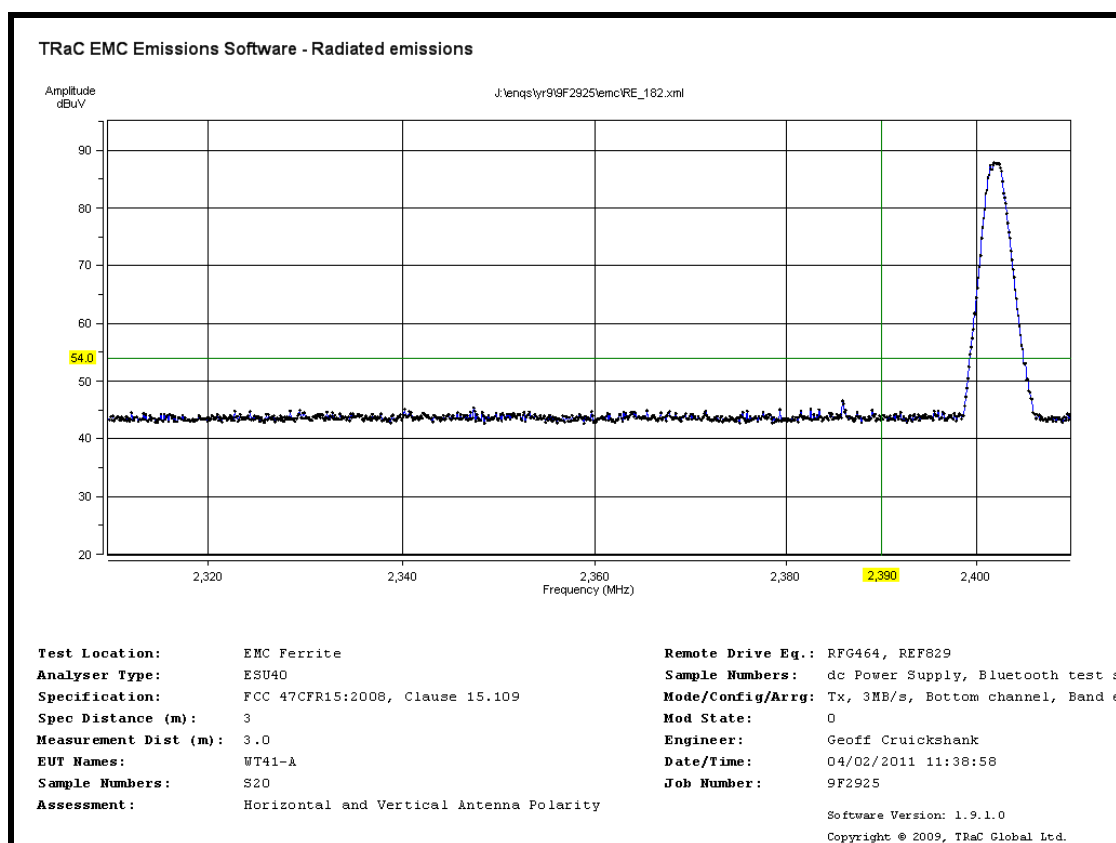


Radiated Spurious emissions 12 GHz to 18GHz – 2480MHz – 3Mbps for S20

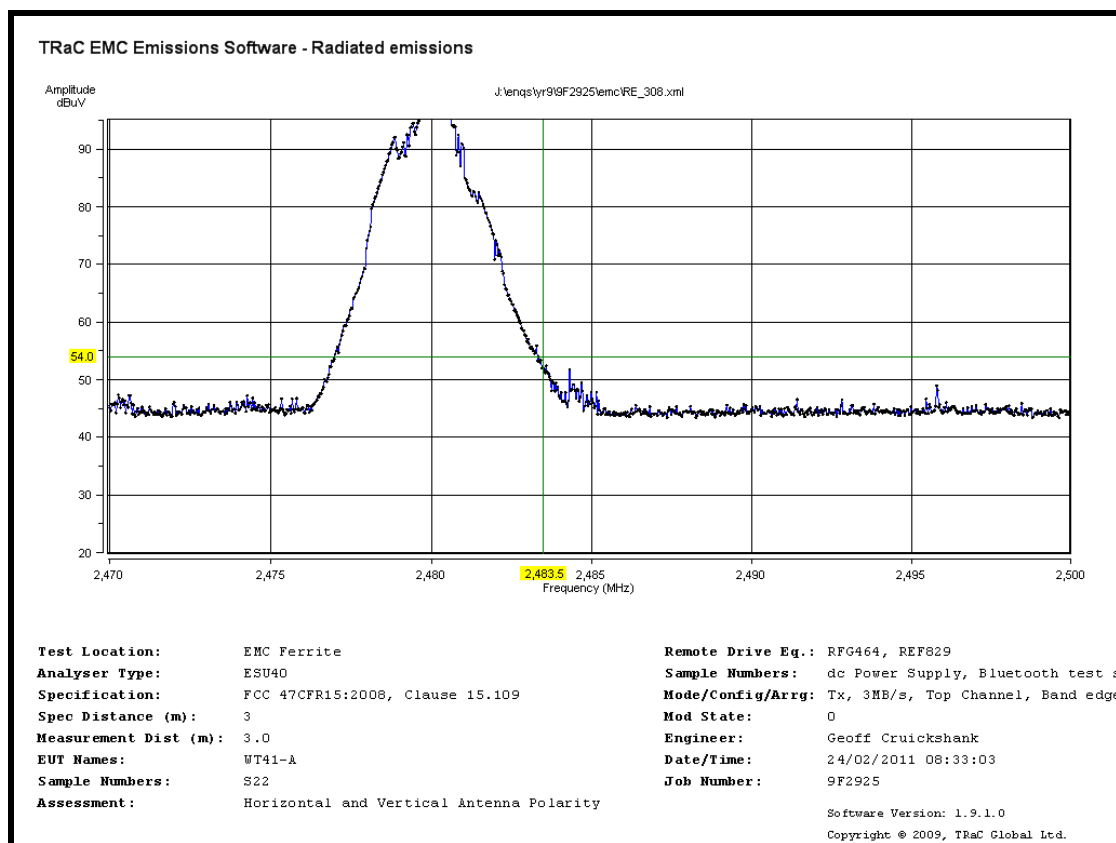


Radiated Spurious emissions 18 GHz to 25 GHz – 2480MHz – 3Mbps for S20

## Radiated Bandedge Compliance – Peak plot to average limit

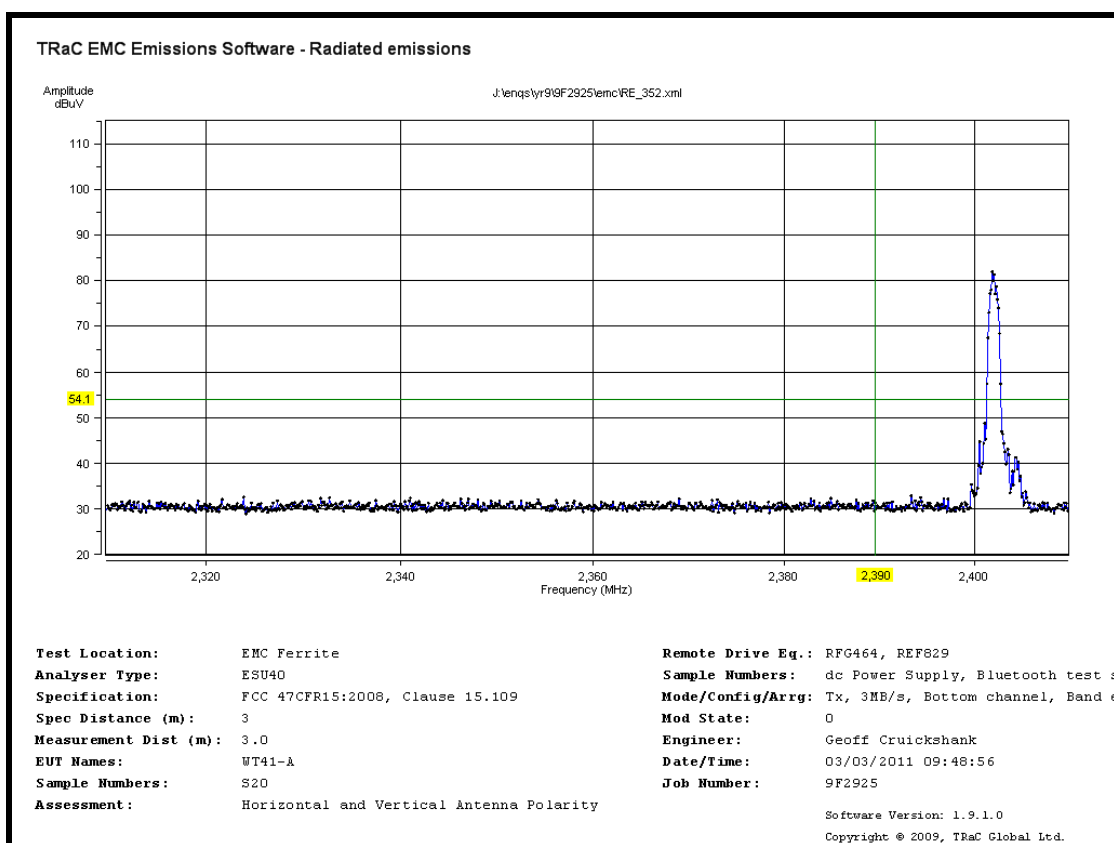


Lower Bandedge

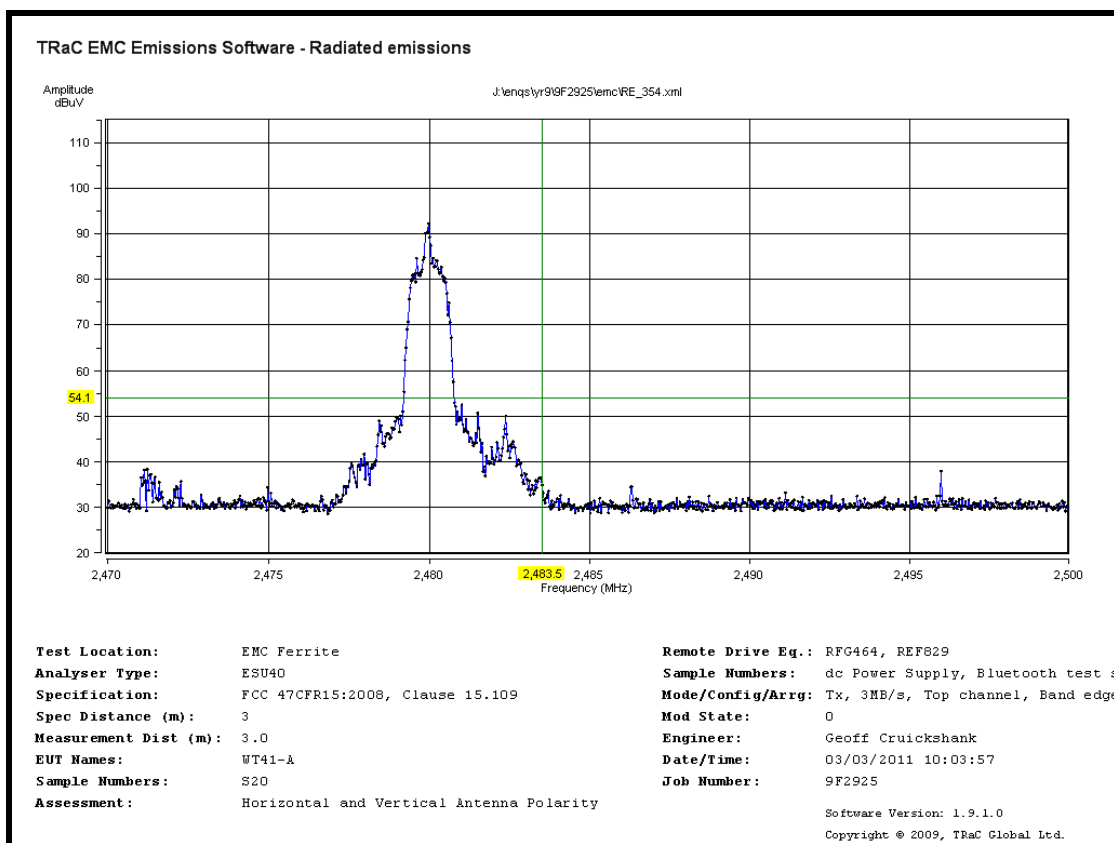


Upper Bandedge

## Radiated Bandedge Compliance – Average plot to average limit

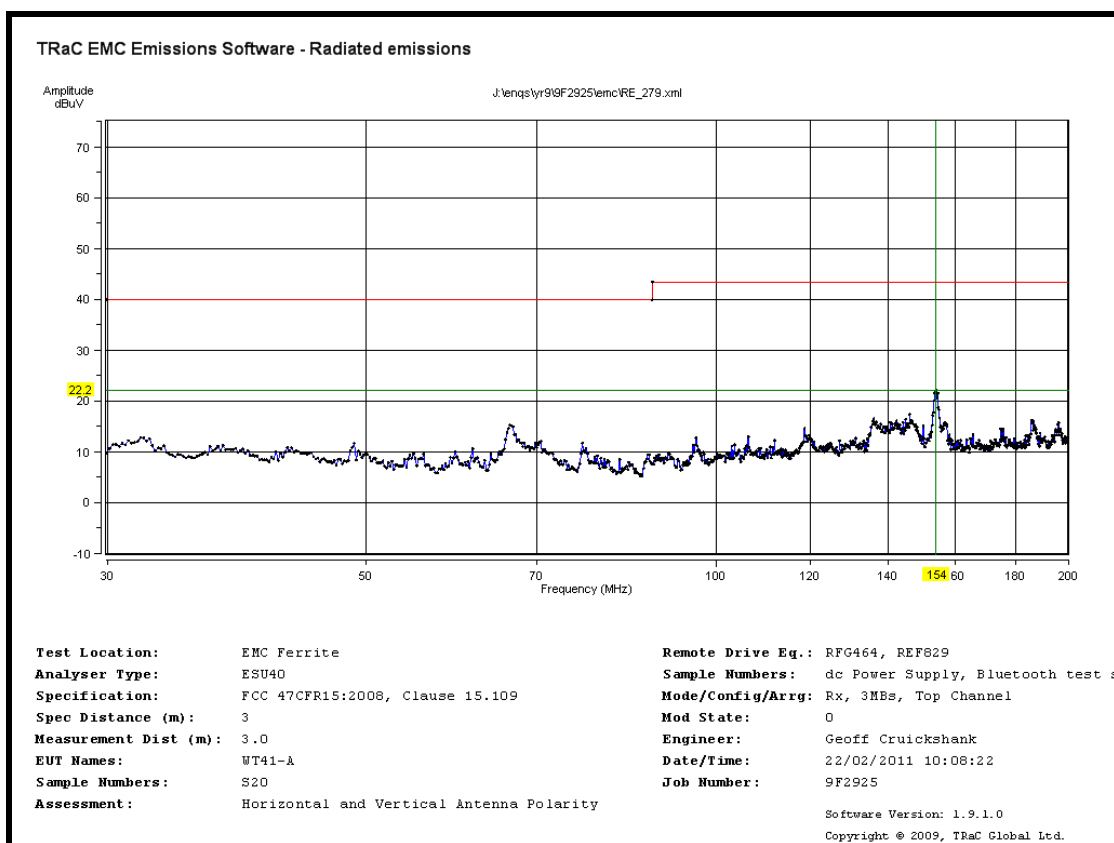


Lower Bandedge

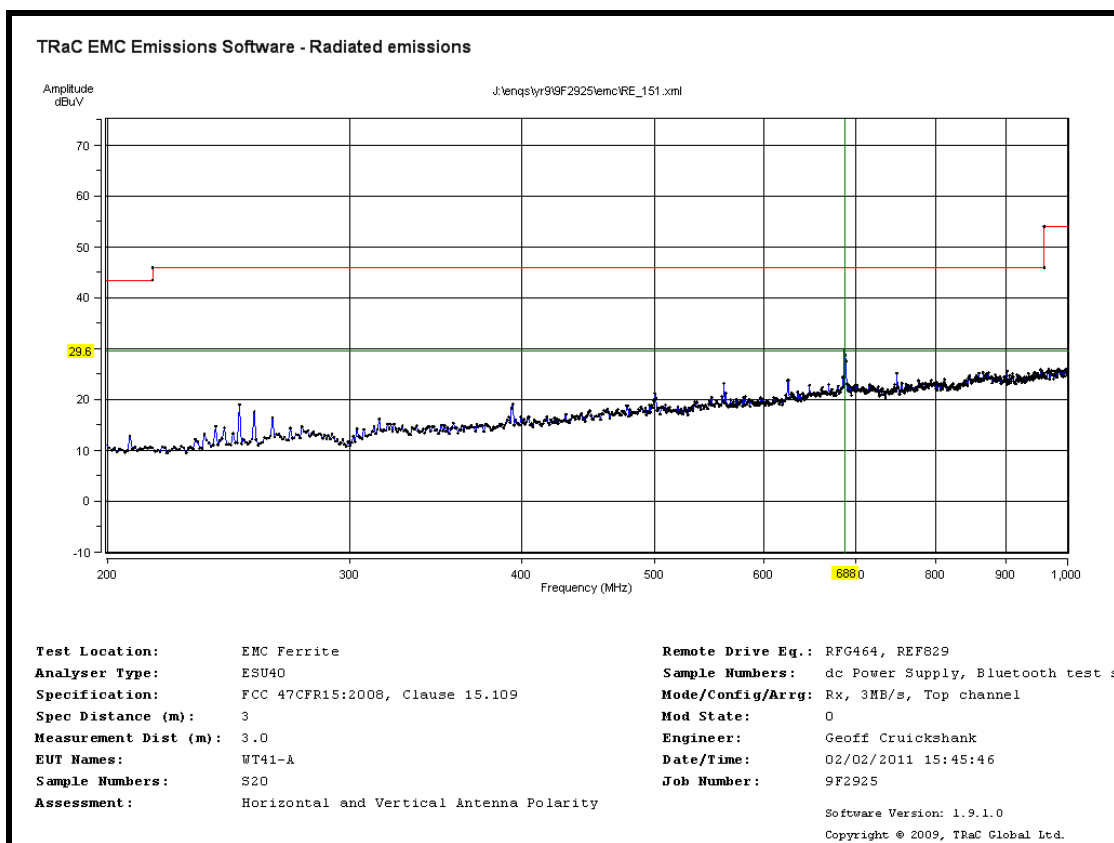


Upper Bandedge

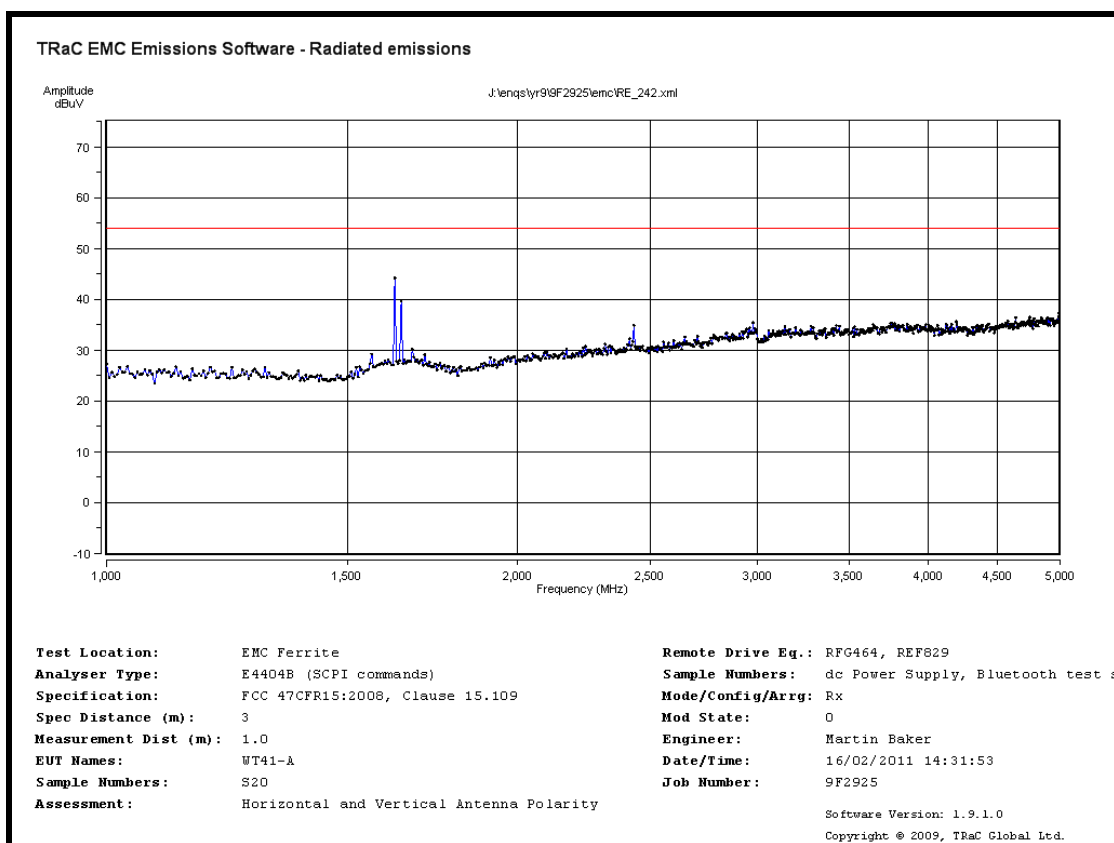




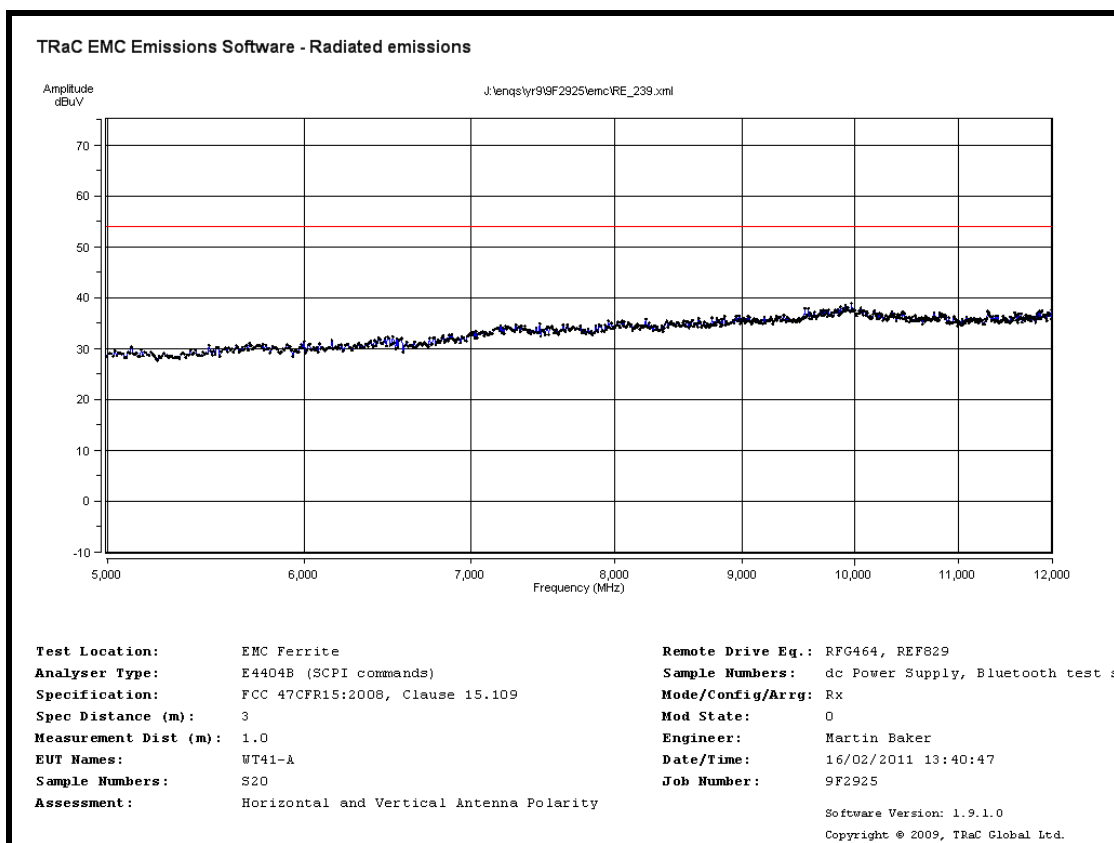
## Unintentional Radiated Spurious emissions 30 MHz to 1 GHz for S20



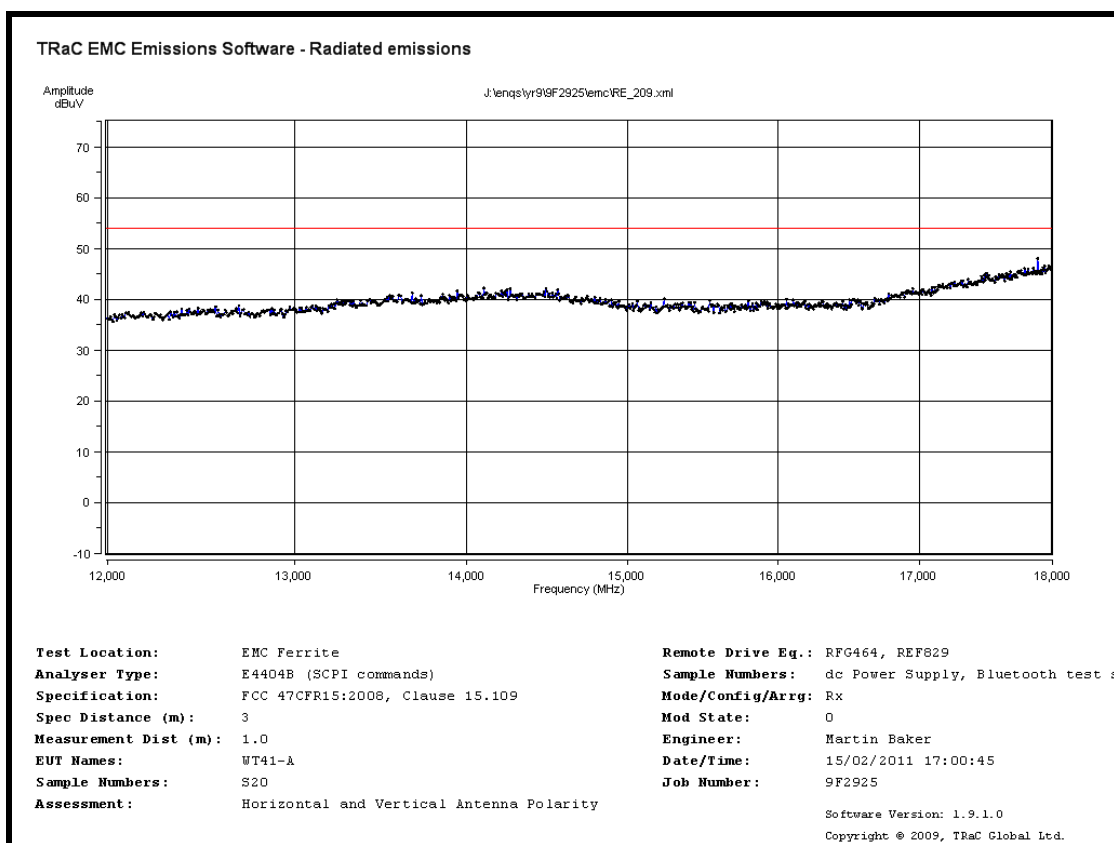
## Unintentional Radiated Spurious emissions 200 MHz to 1000 MHz for S20



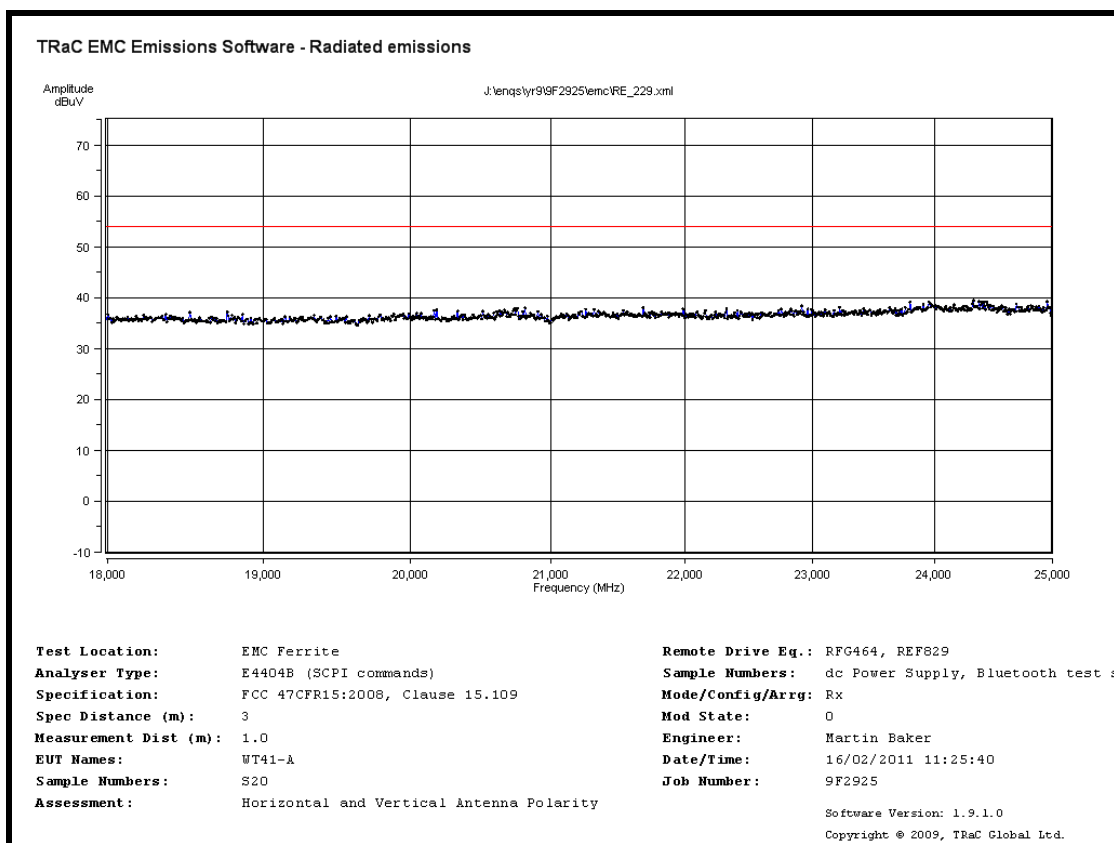
## Unintentional Radiated Spurious emissions 1 GHz to 5 GHz for S20



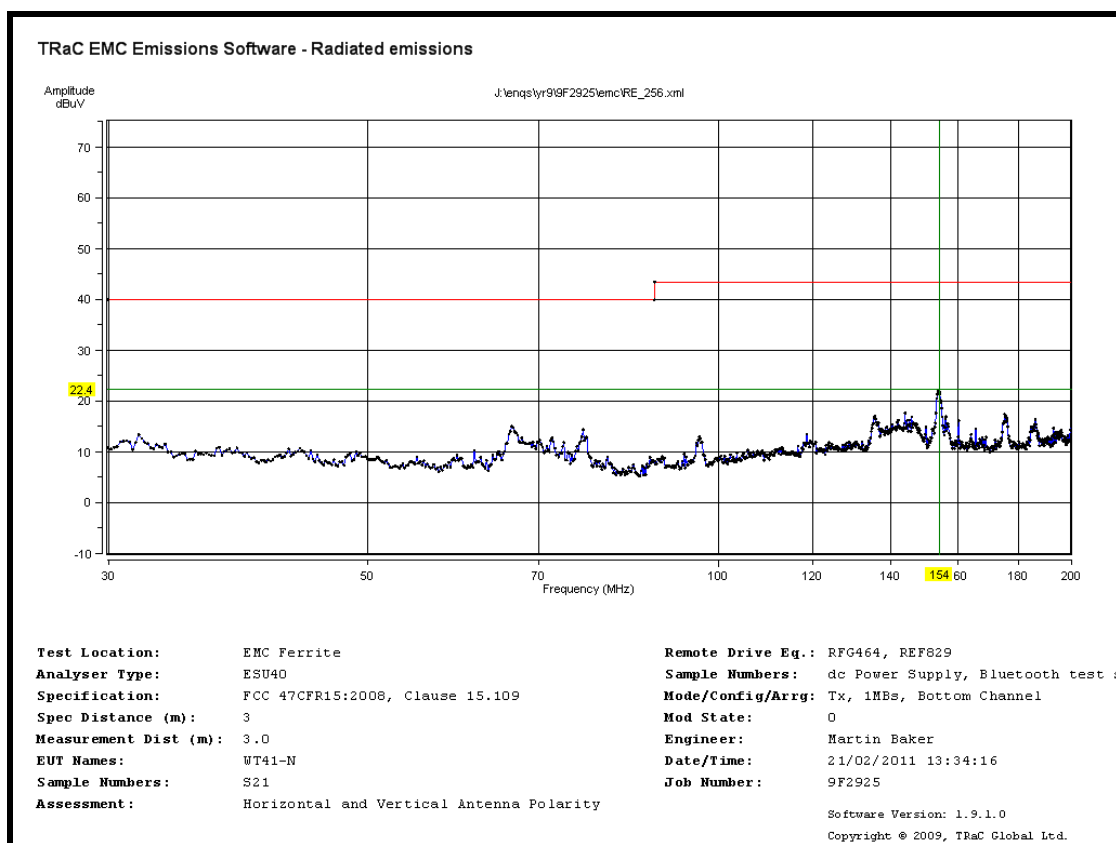
## Unintentional Radiated Spurious emissions 5 GHz to 12 GHz for S20



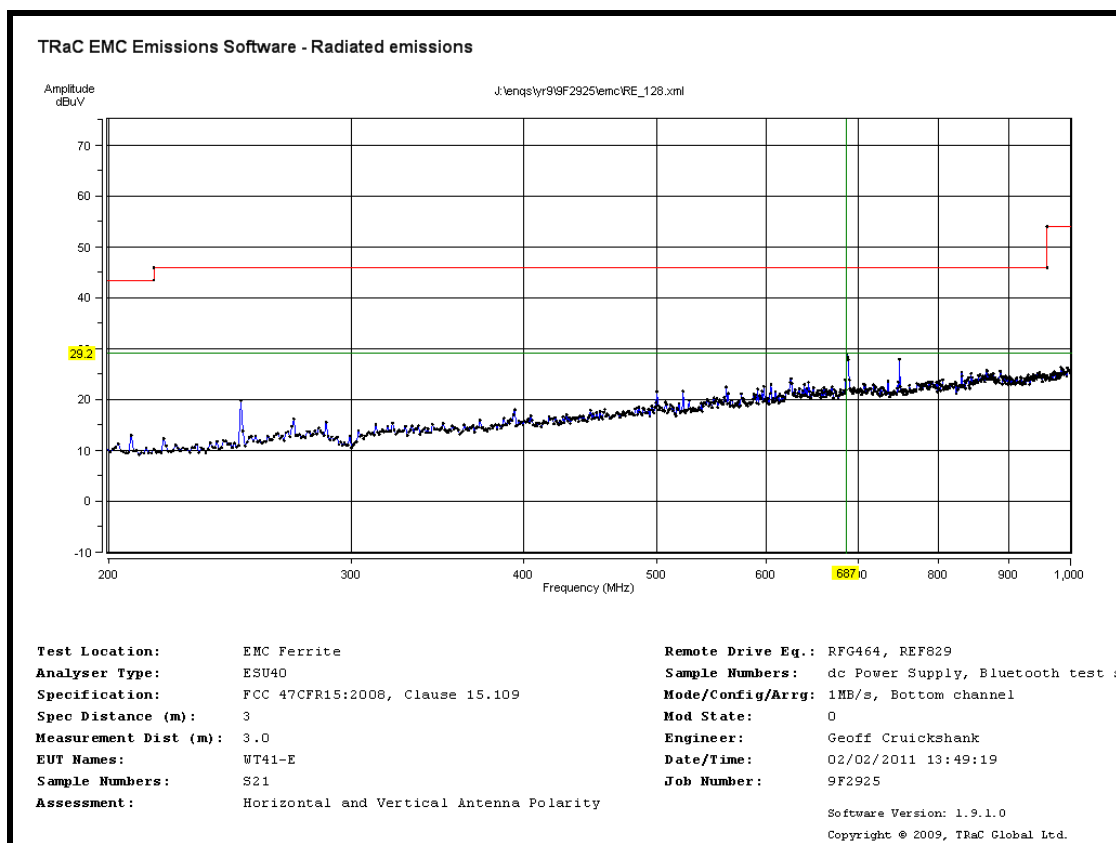
Unintentional Radiated Spurious emissions 12 GHz to 18GHz for S20



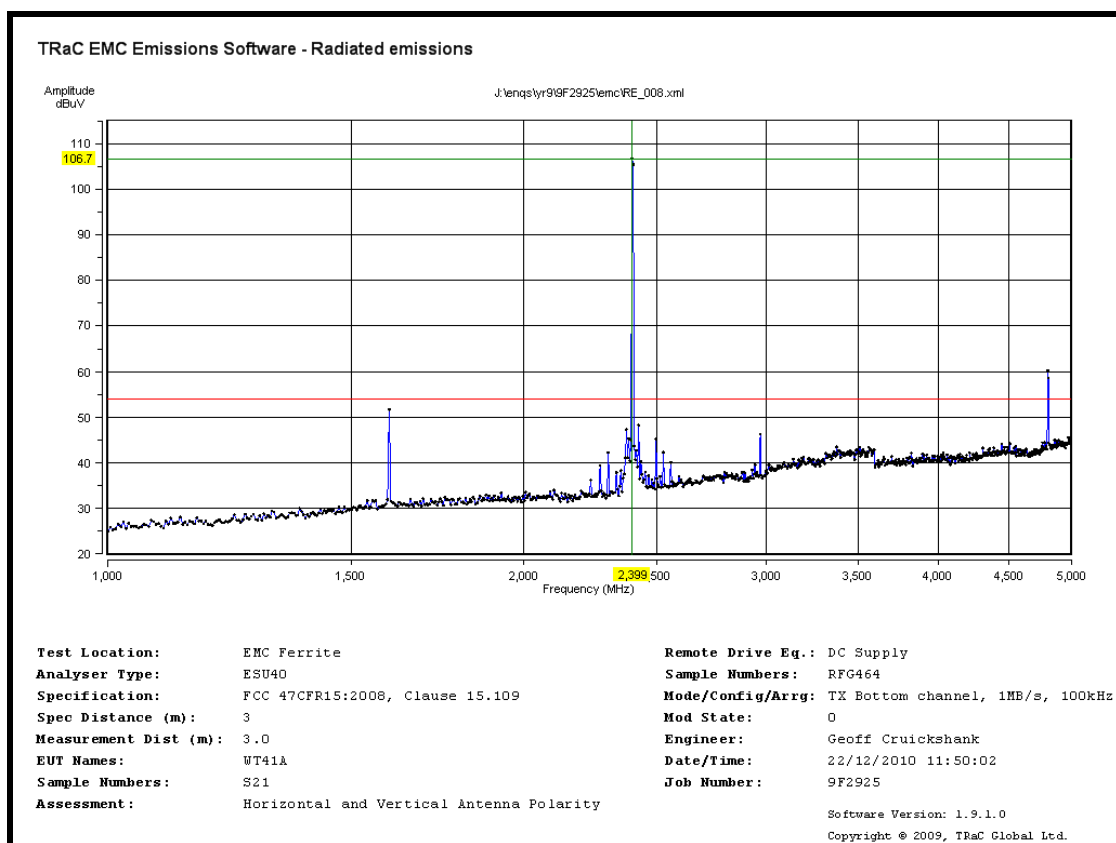
Unintentional Radiated Spurious emissions 18 GHz to 25 GHz for S20



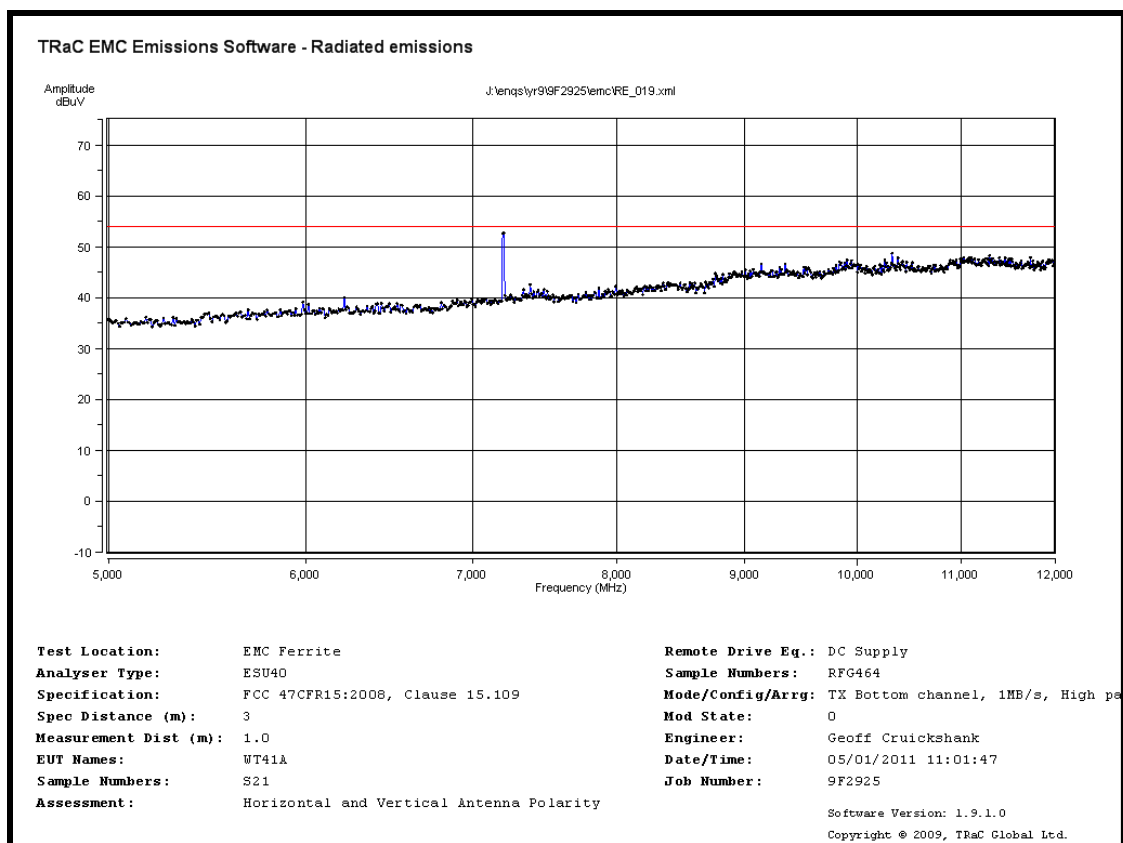
Radiated Spurious emissions 30 MHz to 200 MHz – 2402MHz – 1Mbps for S21



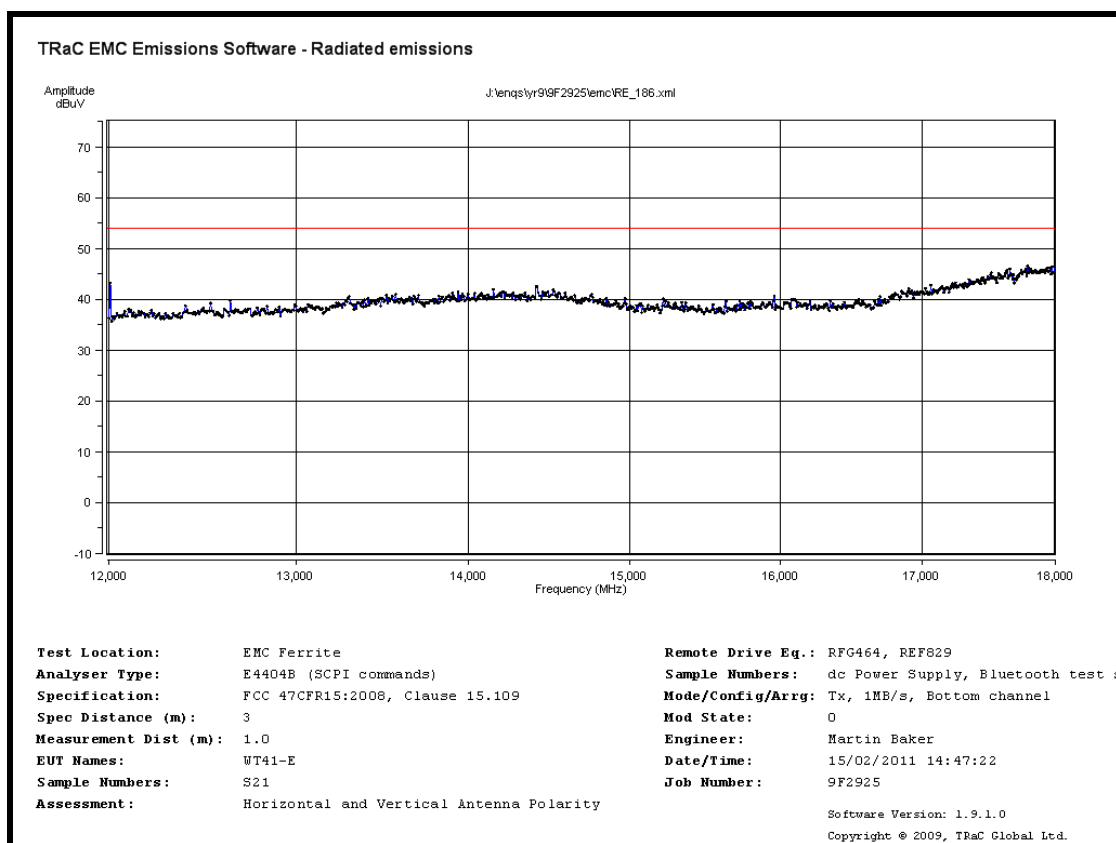
Radiated Spurious emissions 200 MHz to 1 GHz – 2402MHz – 1Mbps for S21



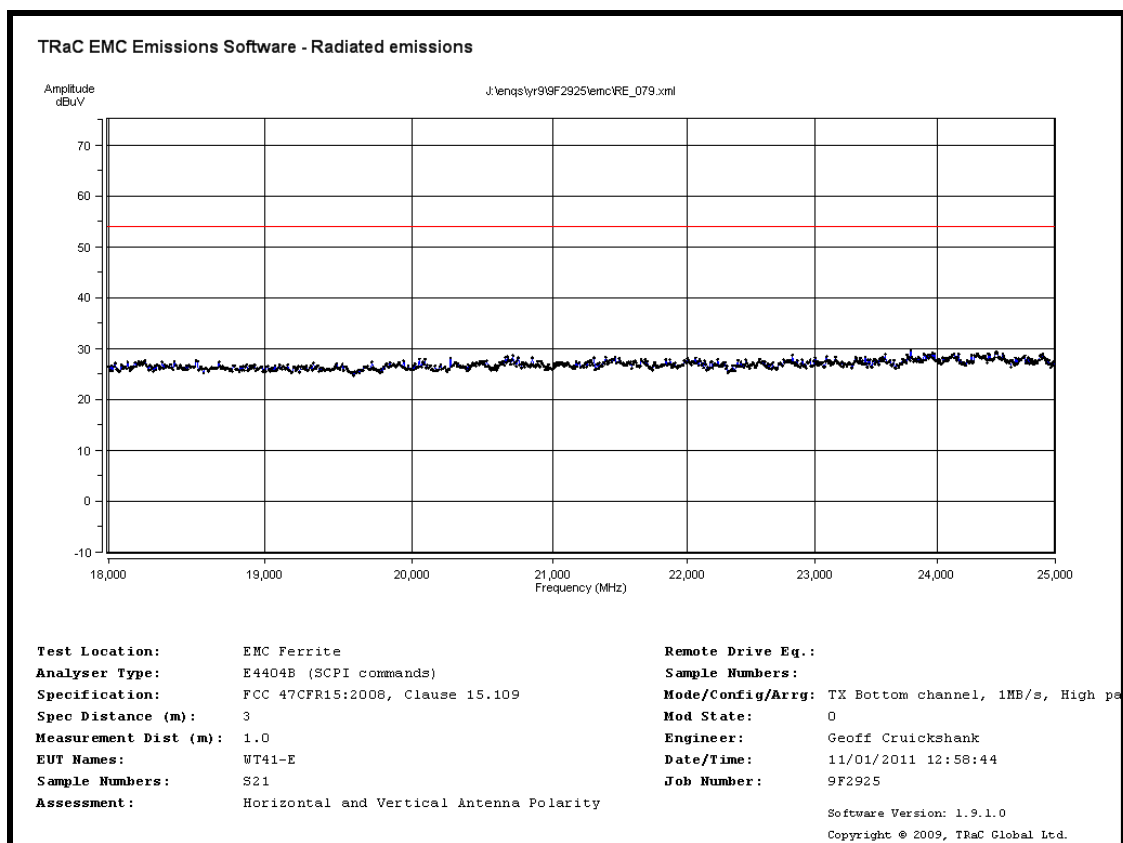
## Radiated Spurious emissions 1 GHz to 5 GHz – 2402MHz – 1Mbps for S21



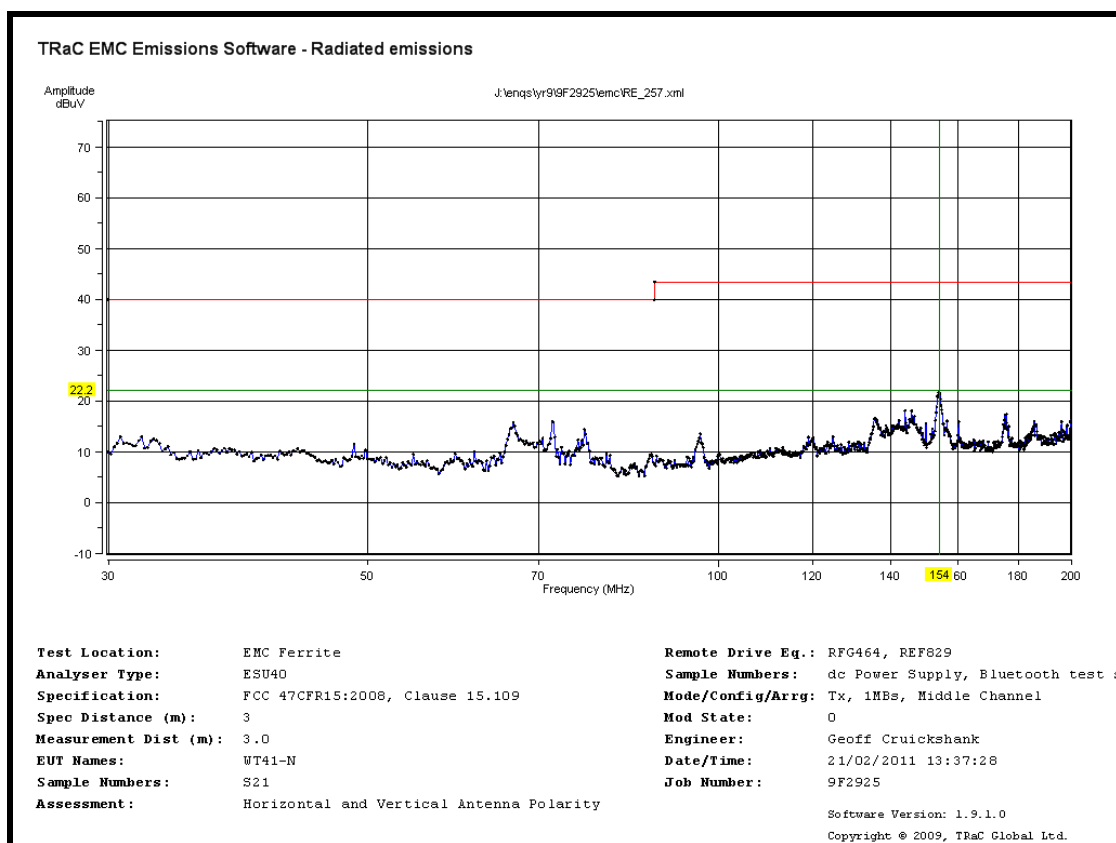
## Radiated Spurious emissions 5 GHz to 12 GHz – 2402MHz – 1Mbps for S21



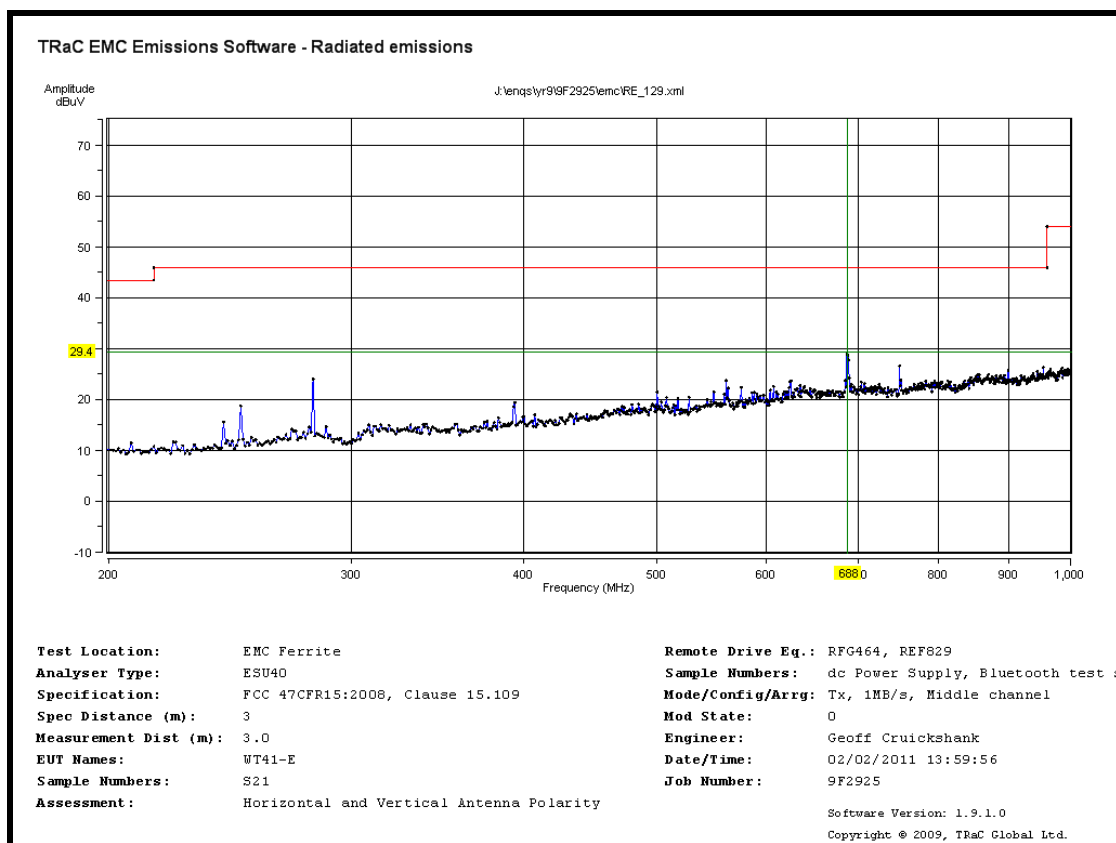
Radiated Spurious emissions 12 GHz to 18GHz – 2402MHz – 1Mbps for S21



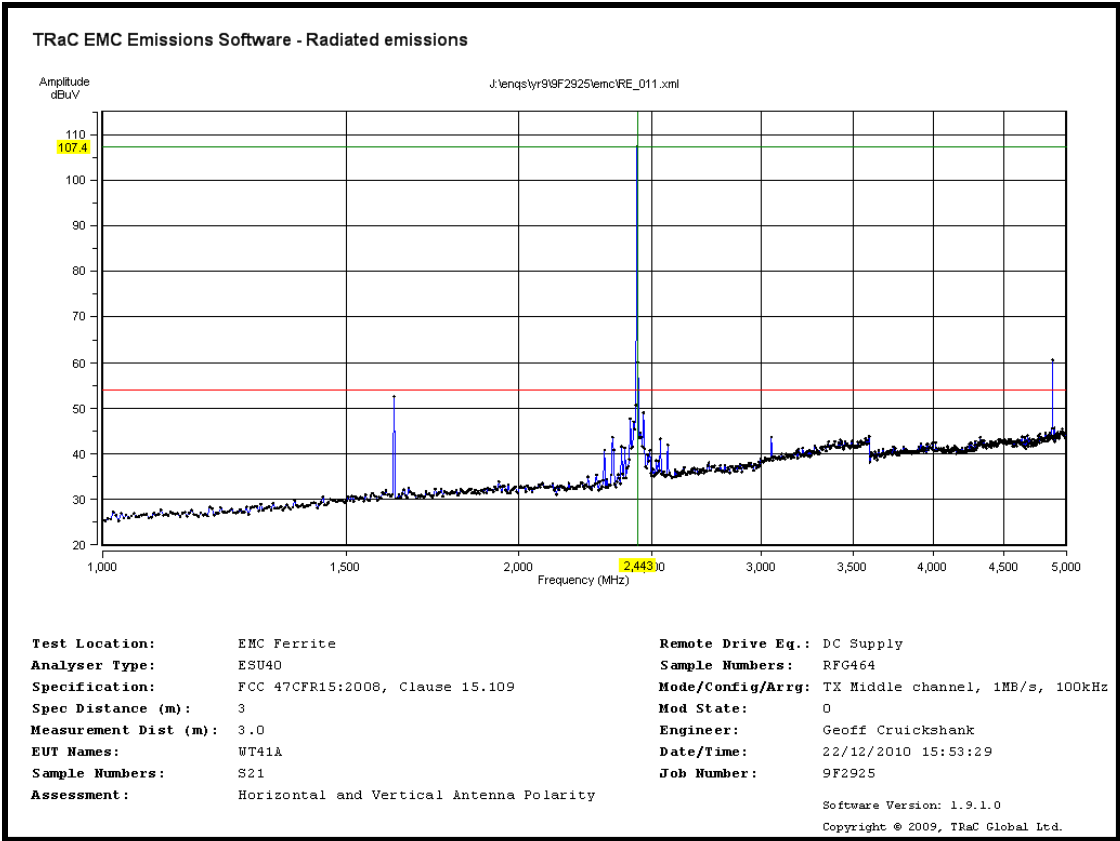
Radiated Spurious emissions 18 GHz to 25 GHz – 2402MHz – 1Mbps for S21



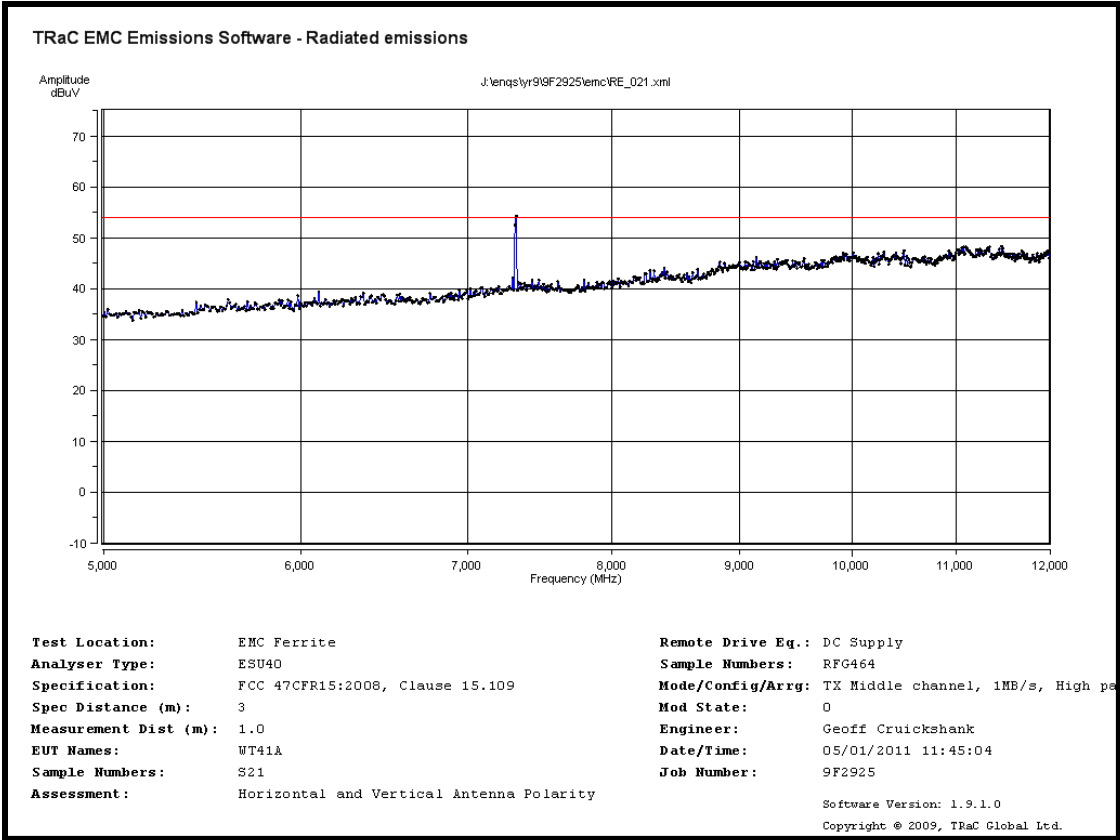
Radiated Spurious emissions 30 MHz to 200 MHz – 2441MHz – 1Mbps for S21



Radiated Spurious emissions 200 MHz to 1 GHz – 2441MHz – 1Mbps for S21

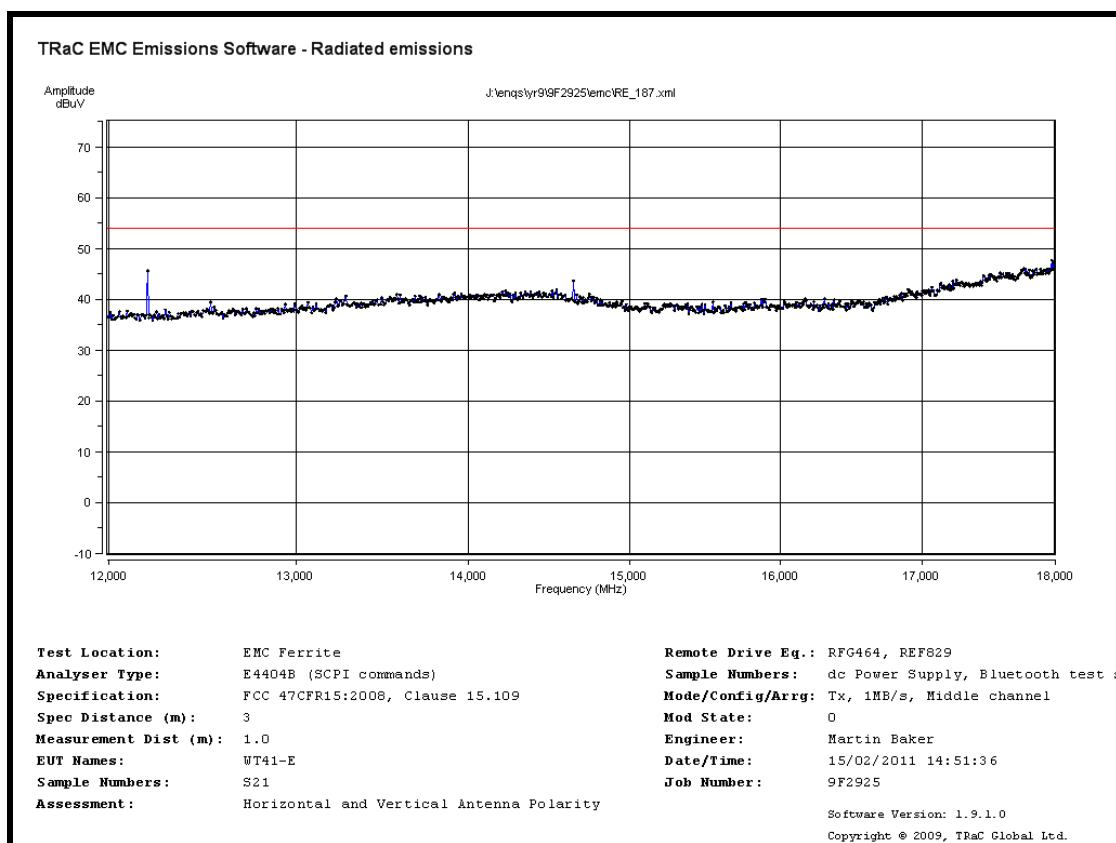


Radiated Spurious emissions 1 GHz to 5 GHz – 2441MHz – 1Mbps for S21

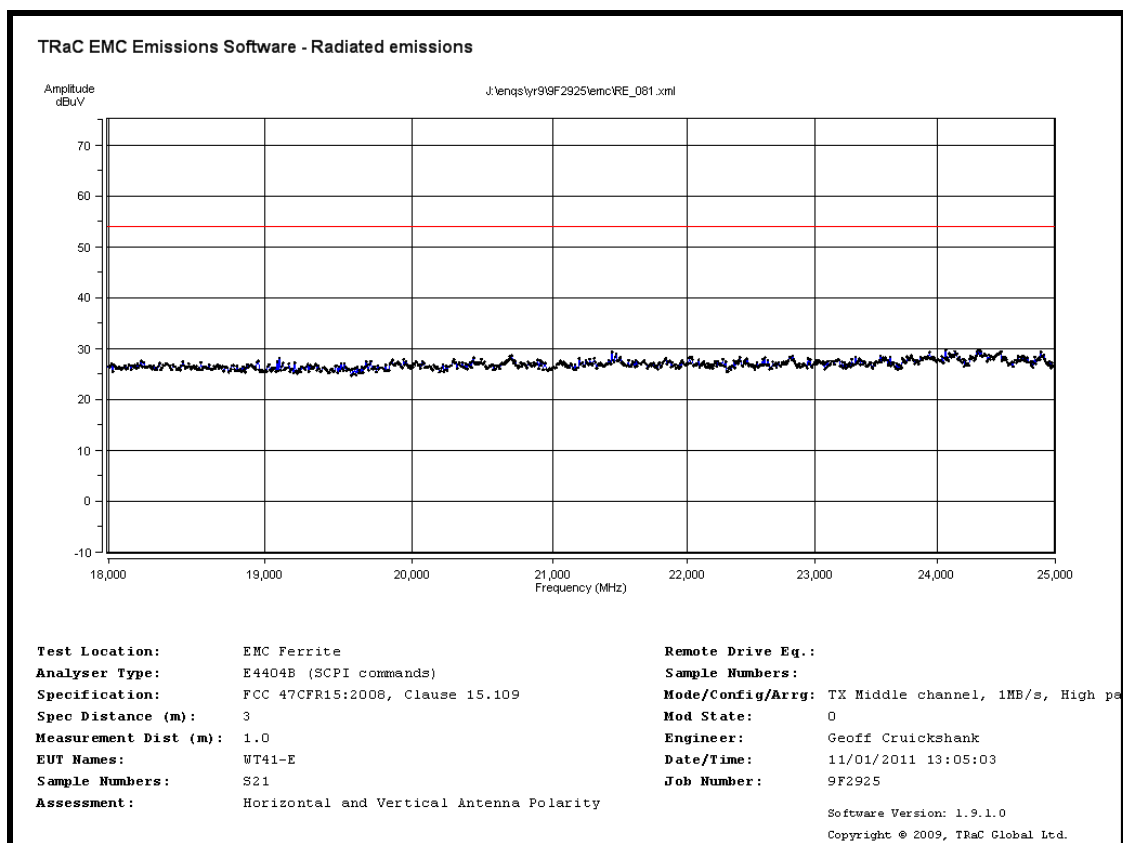


Radiated Spurious emissions 5 GHz to 12 GHz – 2441MHz – 1Mbps for S21

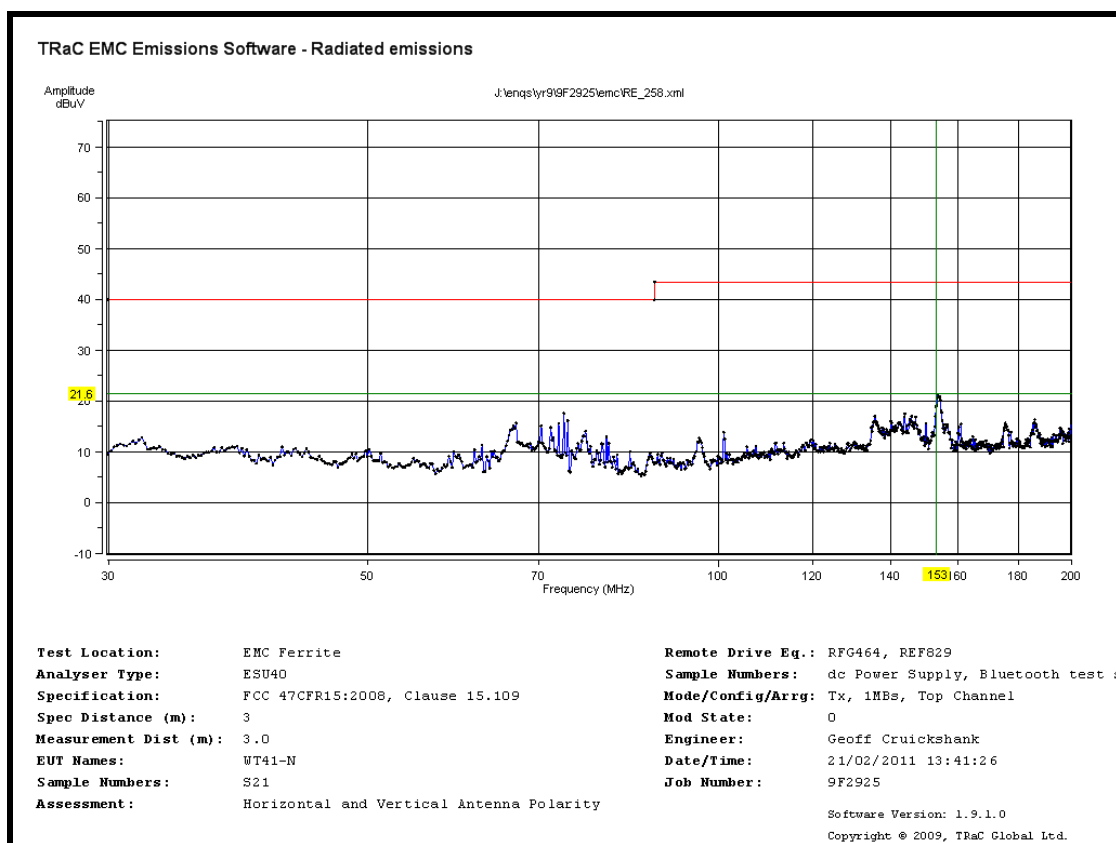




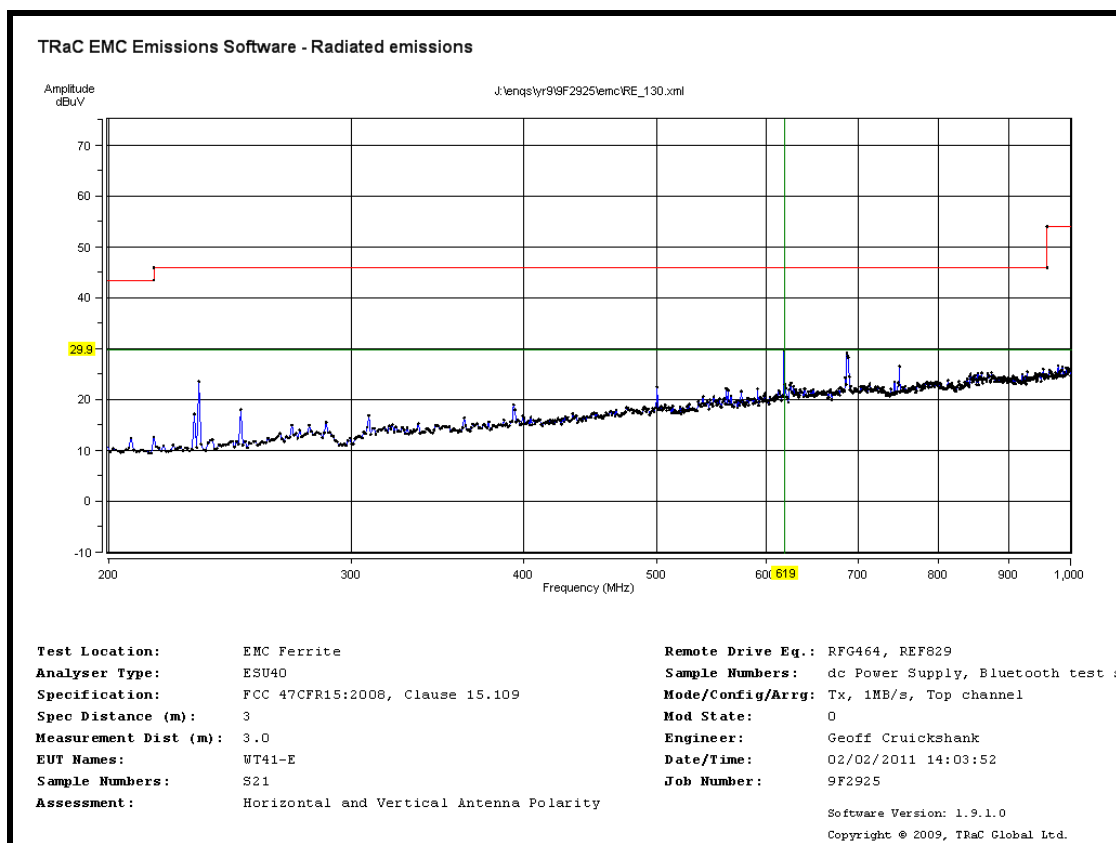
Radiated Spurious emissions 12 GHz to 18GHz – 2441MHz – 1Mbps for S21



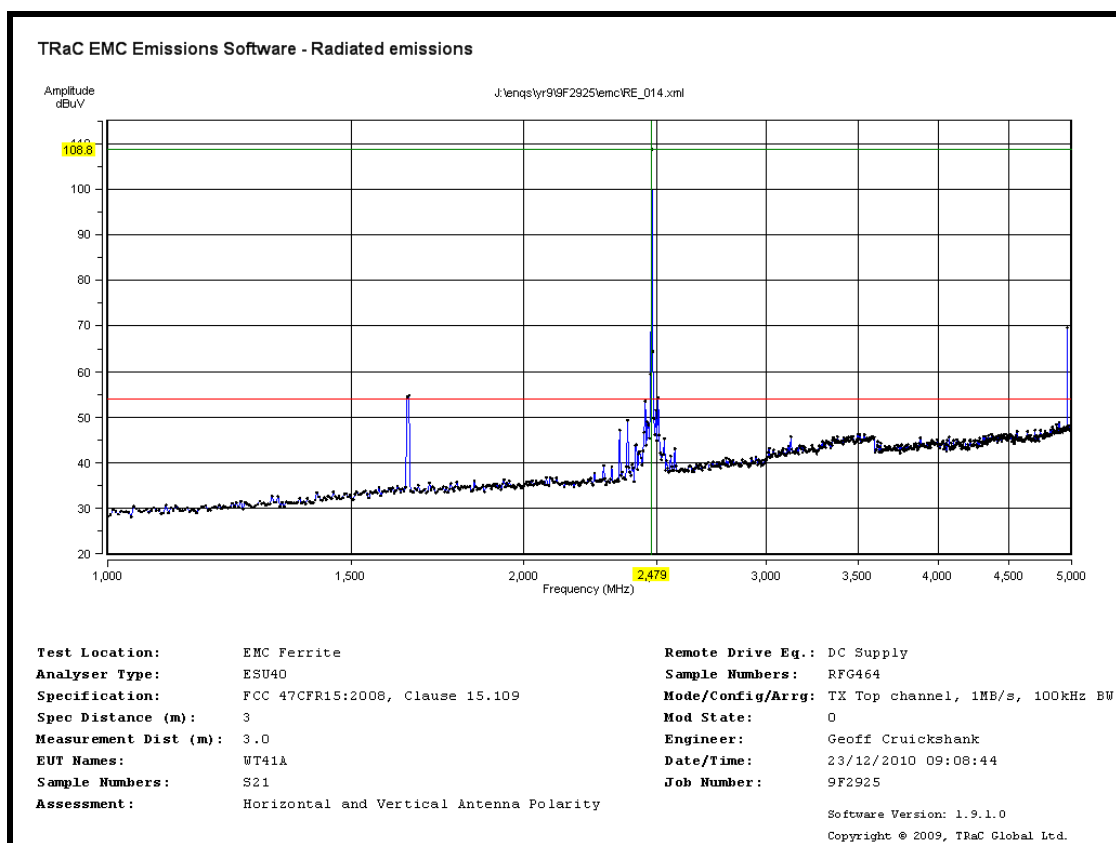
Radiated Spurious emissions 18 GHz to 25 GHz – 2441MHz – 1Mbps for S21



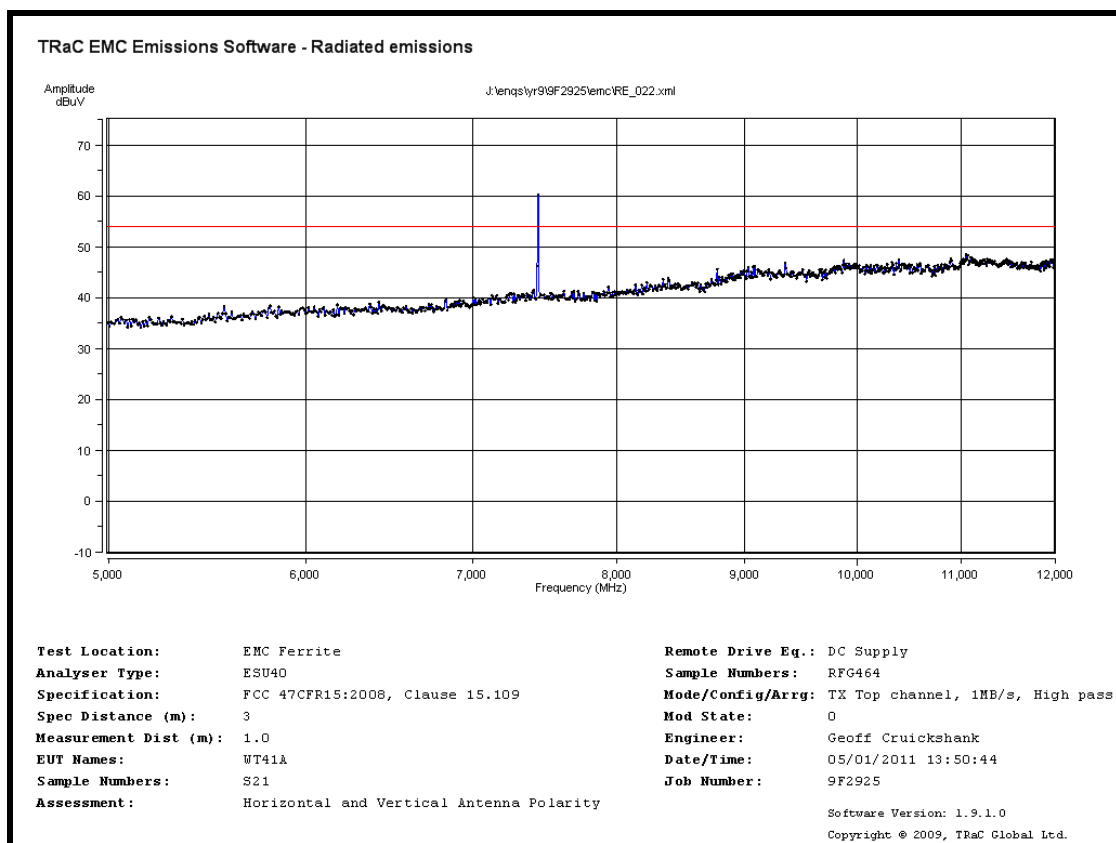
Radiated Spurious emissions 30 MHz to 200 MHz – 2480MHz – 1Mbps for S21



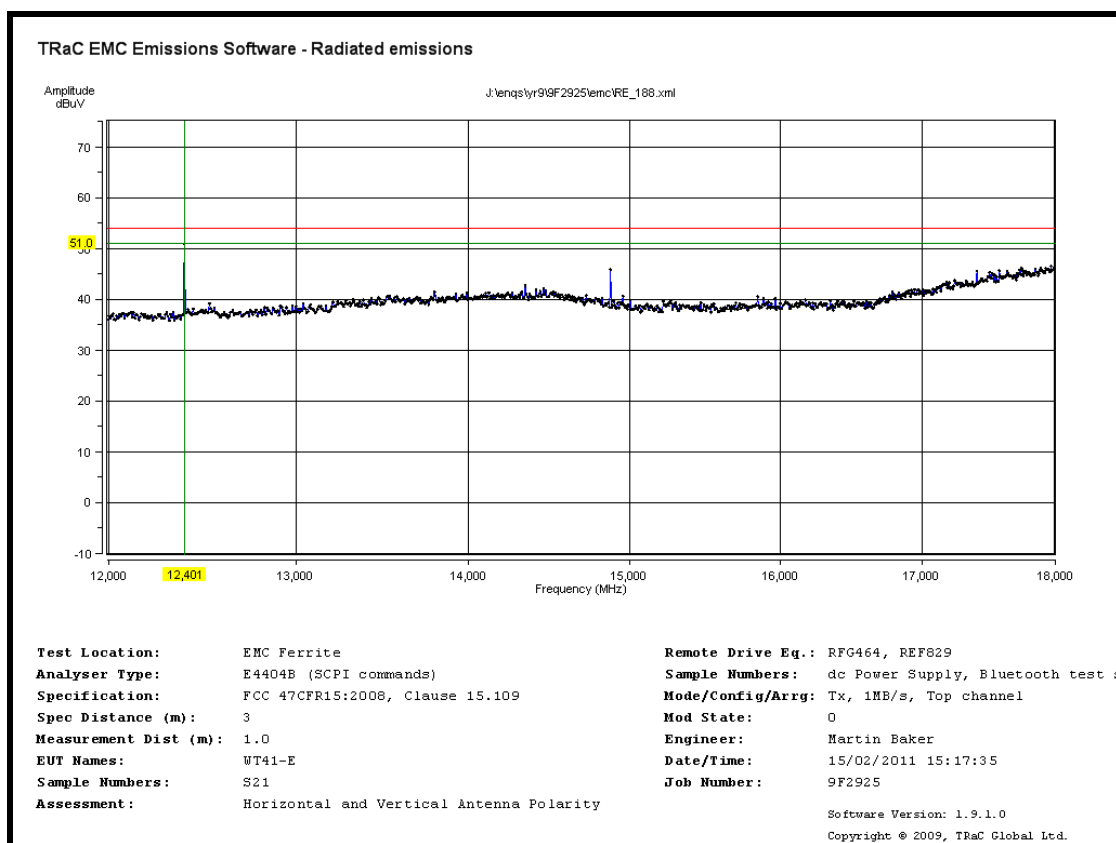
Radiated Spurious emissions 200 MHz to 1 GHz – 2480MHz – 1Mbps for S21



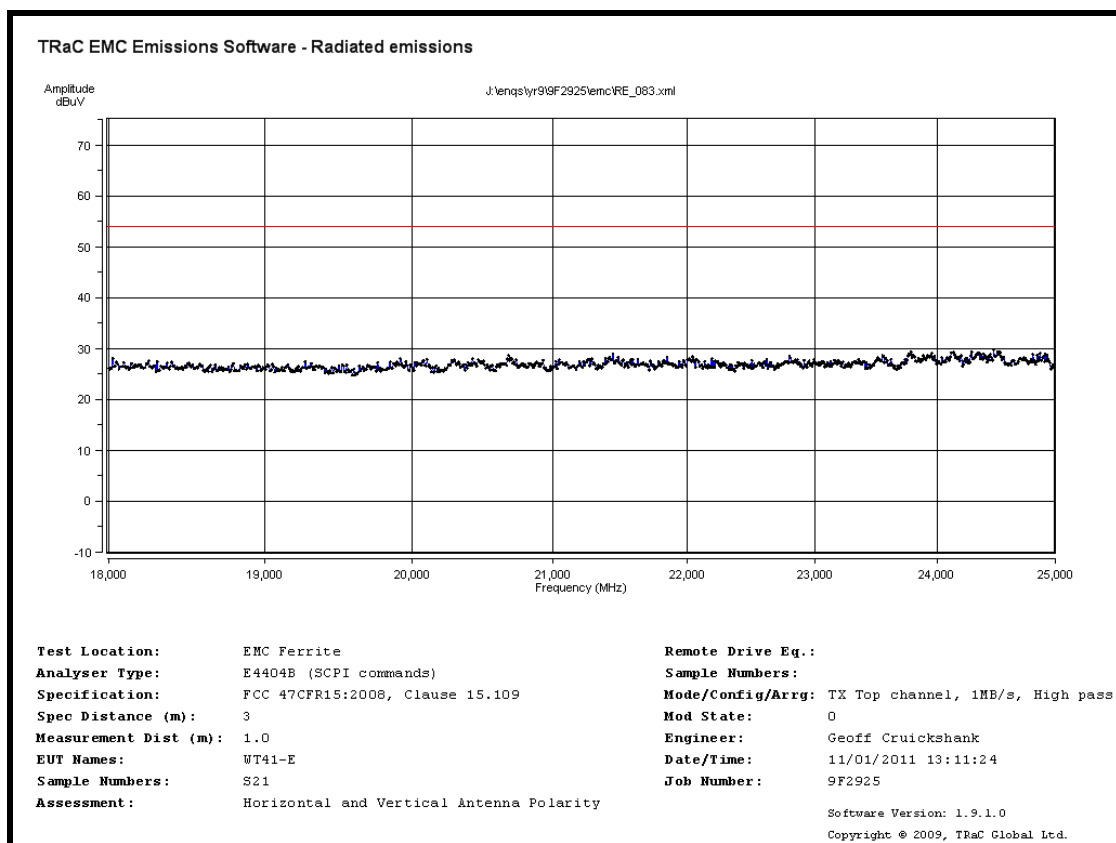
## Radiated Spurious emissions 1 GHz to 5 GHz – 2480MHz – 1Mbps for S21



## Radiated Spurious emissions 5 GHz to 12 GHz – 2480MHz – 1Mbps for S21

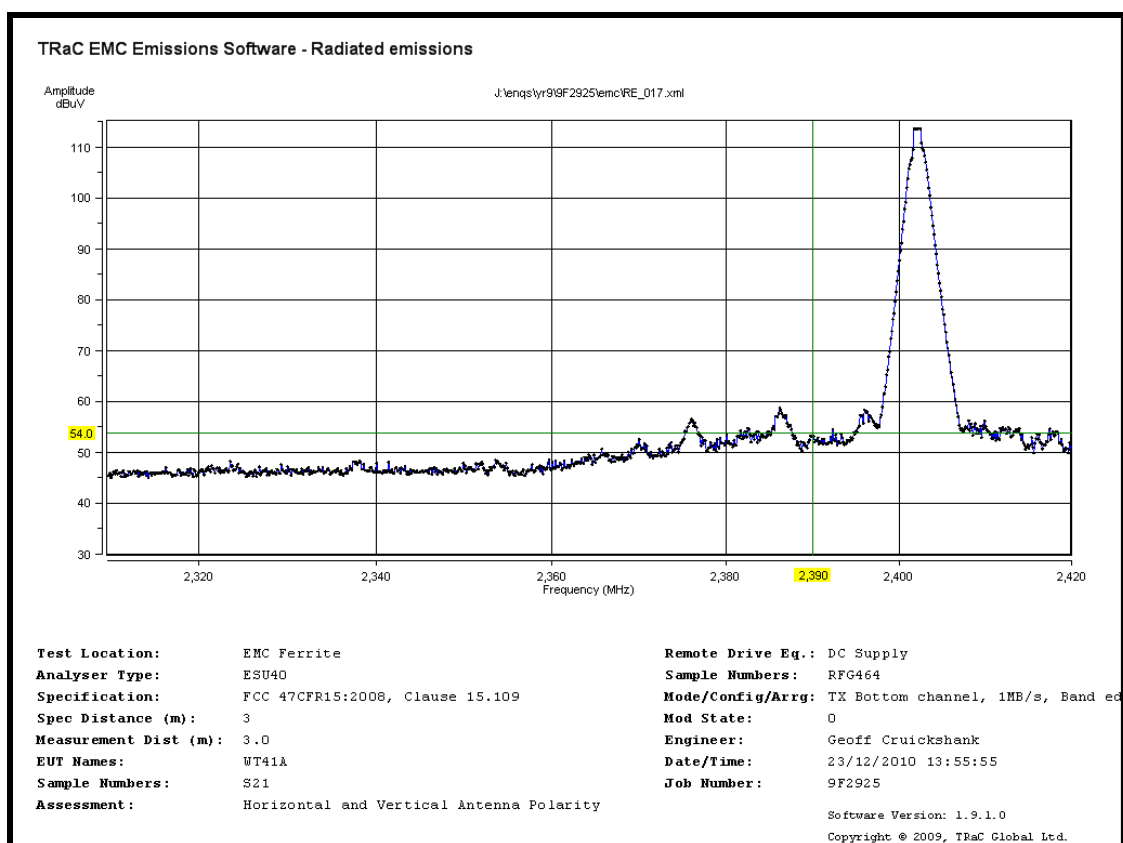


Radiated Spurious emissions 12 GHz to 18GHz – 2480MHz – 1Mbps for S21

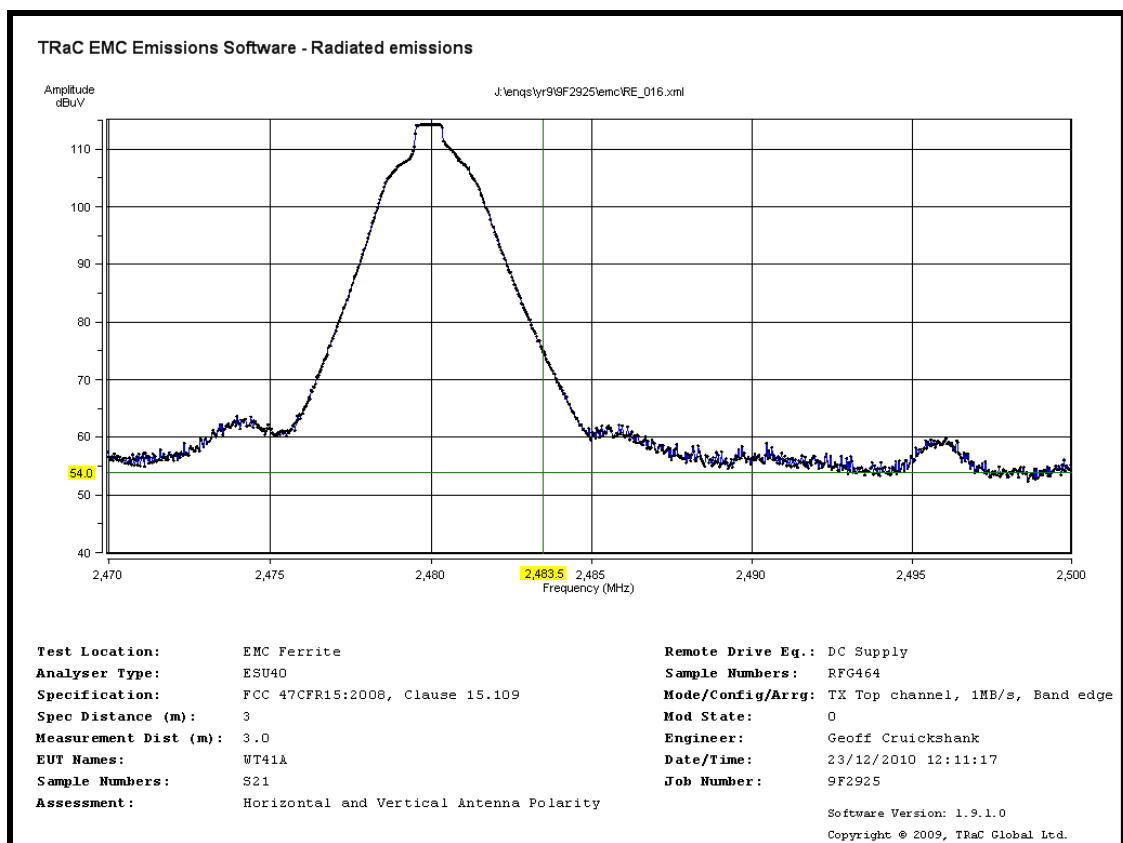


Radiated Spurious emissions 18 GHz to 25 GHz – 2480MHz – 1Mbps for S21

## Radiated Bandedge Compliance – Peak plot to average limit

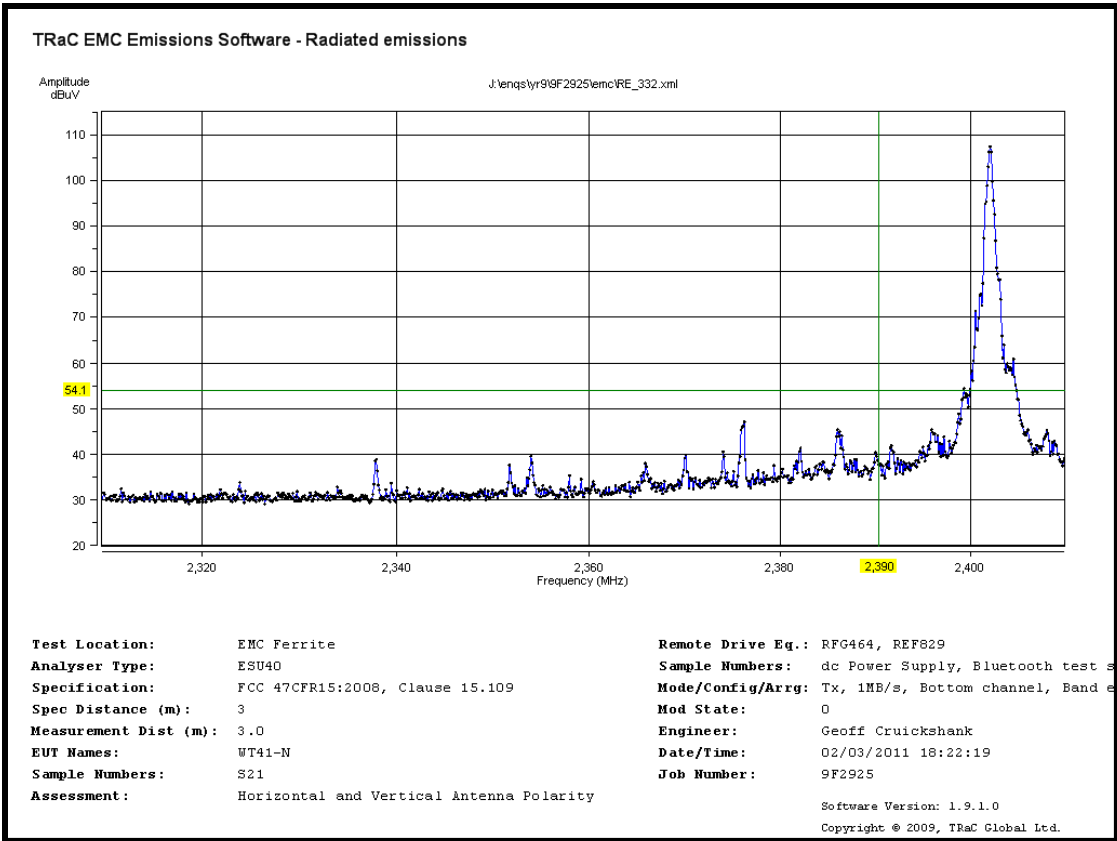


Lower Bandedge

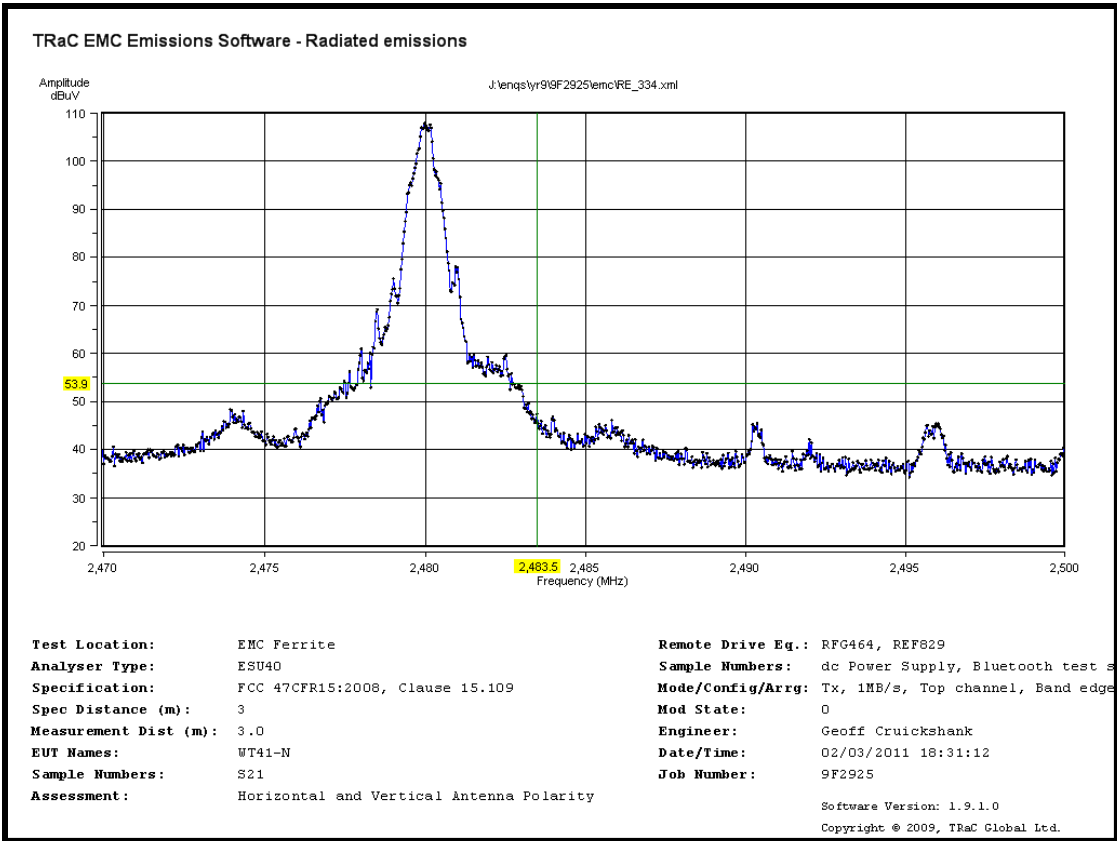


Upper Bandedge

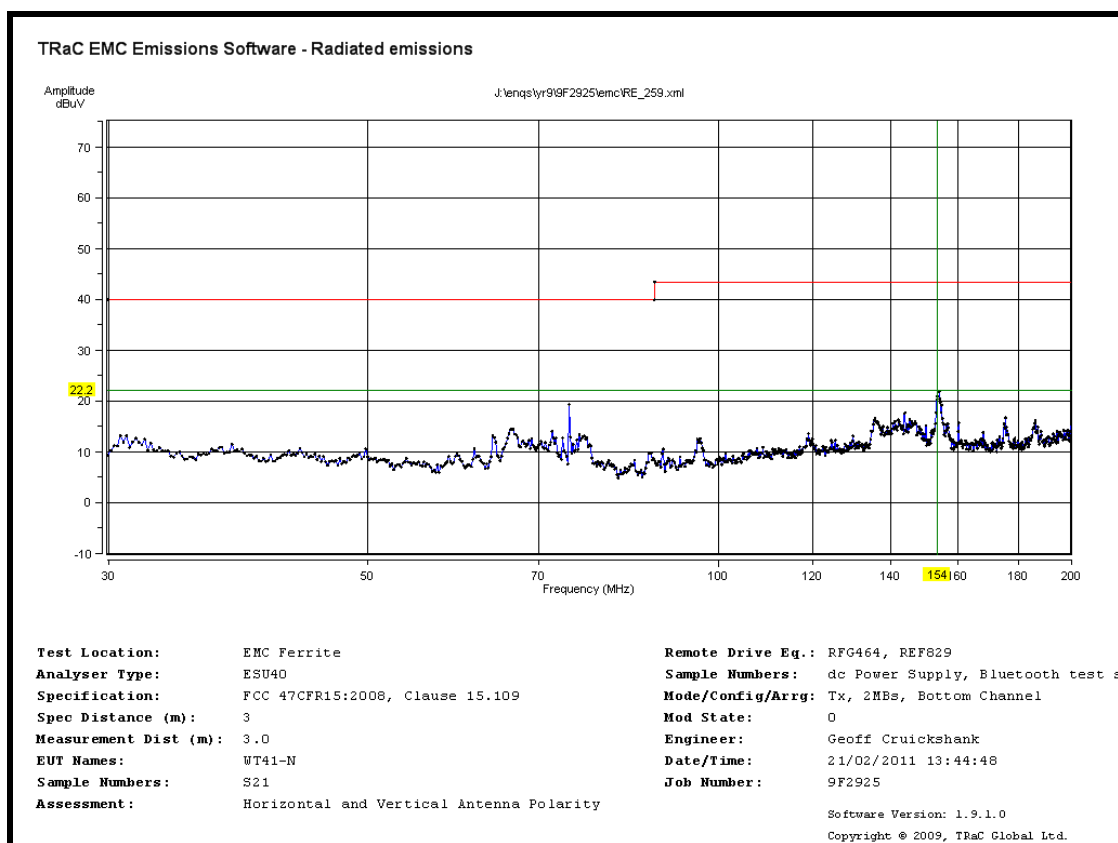
Radiated Bandedge Compliance – Average plot to Average limit



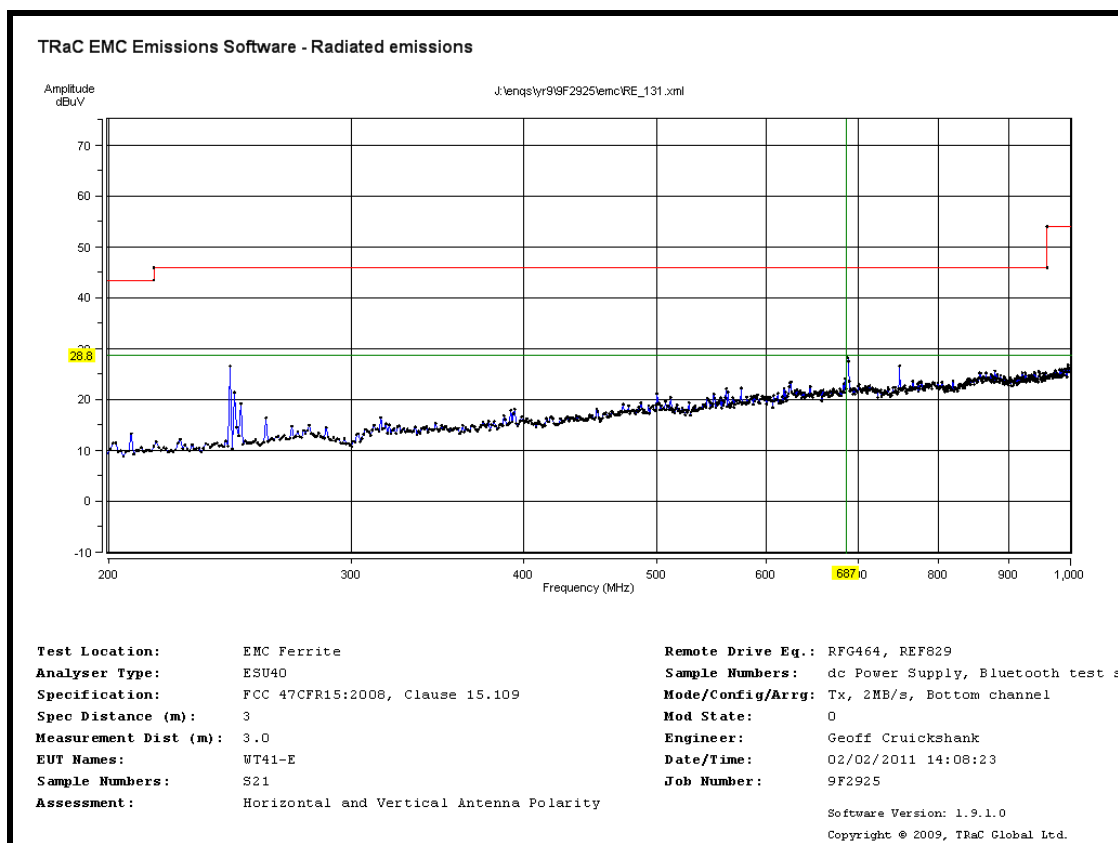
Lower Bandedge



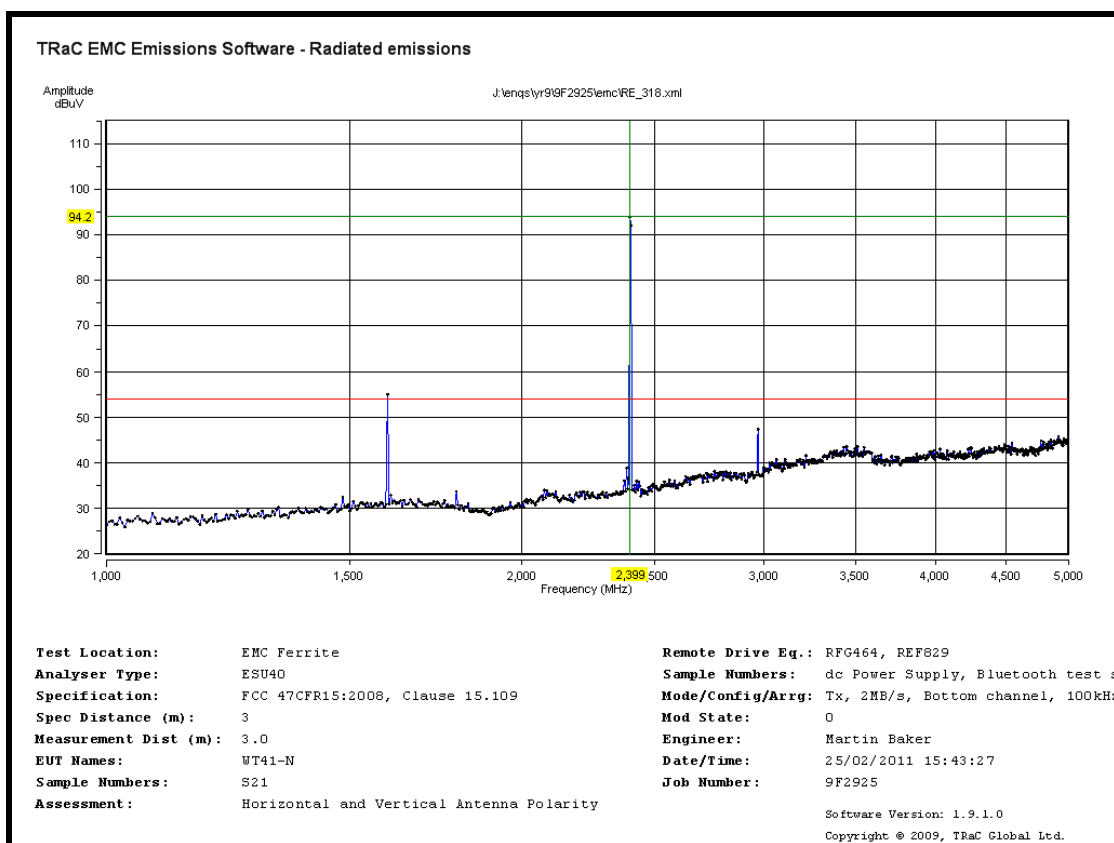
Upper Bandedge



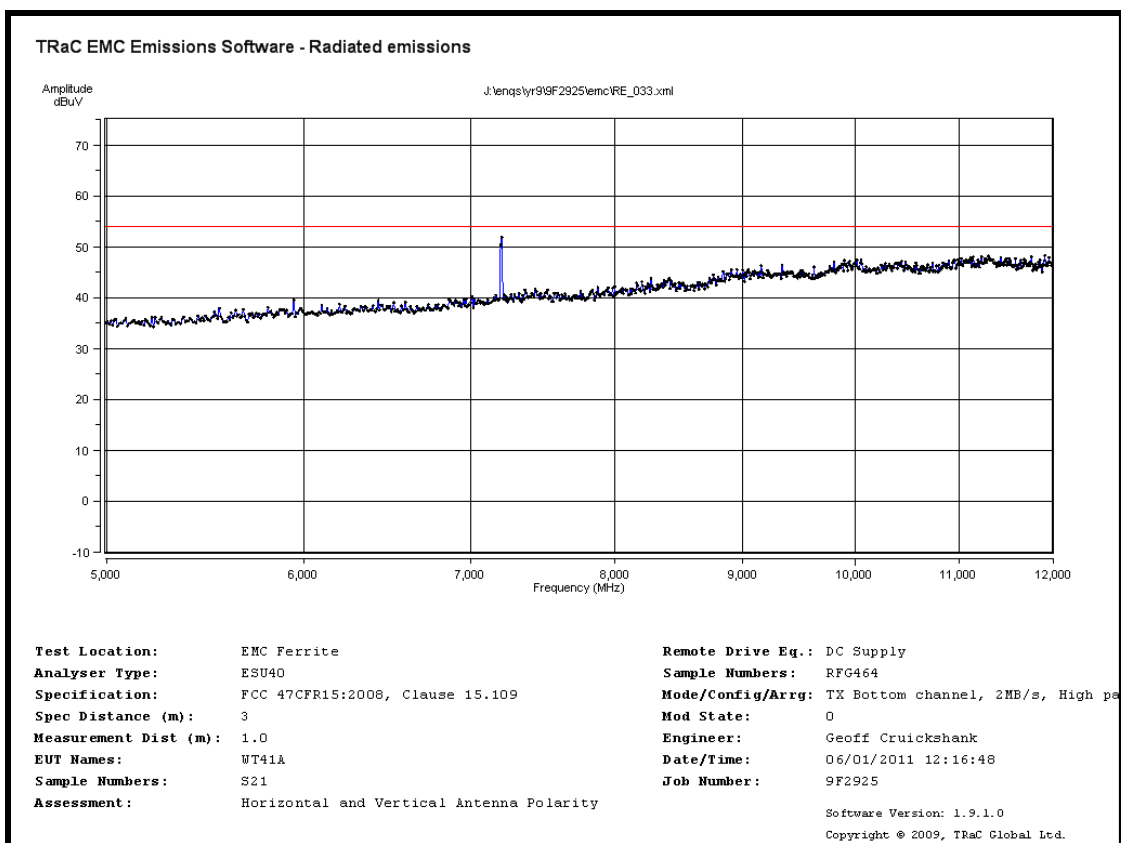
Radiated Spurious emissions 30 MHz to 200 MHz – 2402MHz – 2Mbps for S21



Radiated Spurious emissions 200 MHz to 1 GHz – 2402MHz – 2Mbps for S21

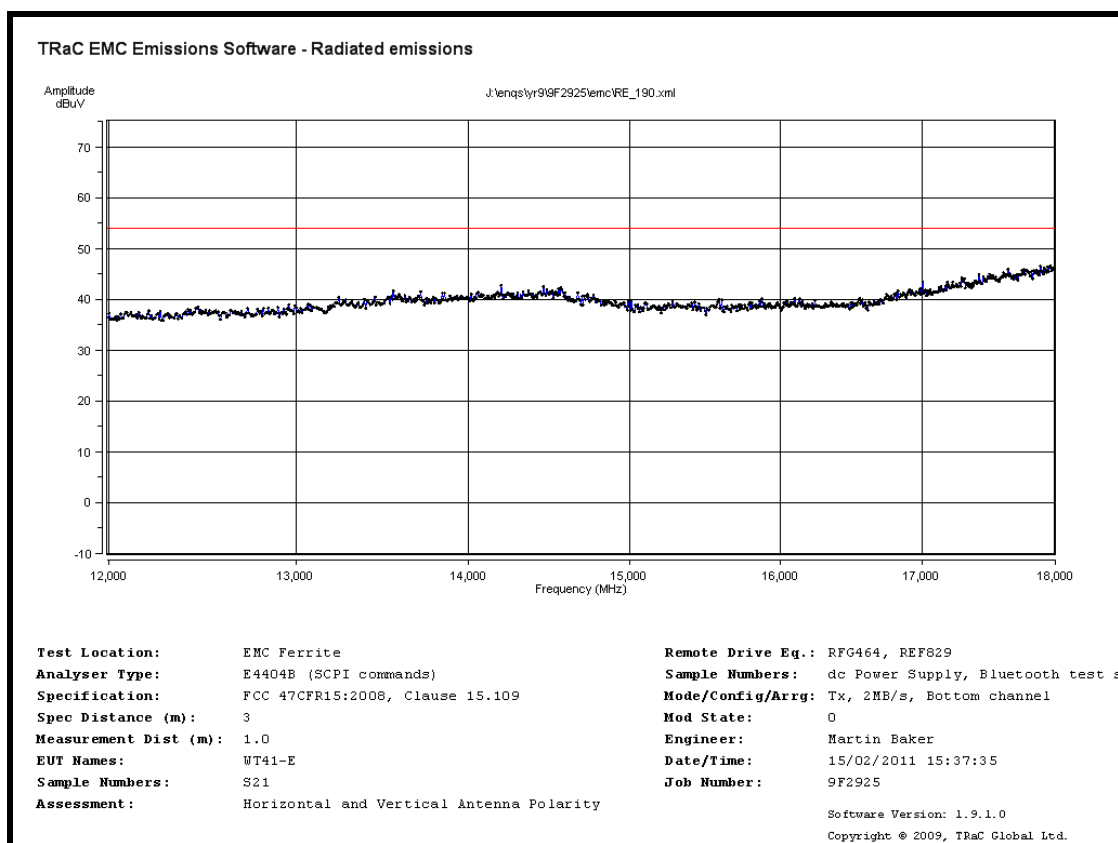


## Radiated Spurious emissions 1 GHz to 5 GHz – 2402MHz – 2Mbps for S21

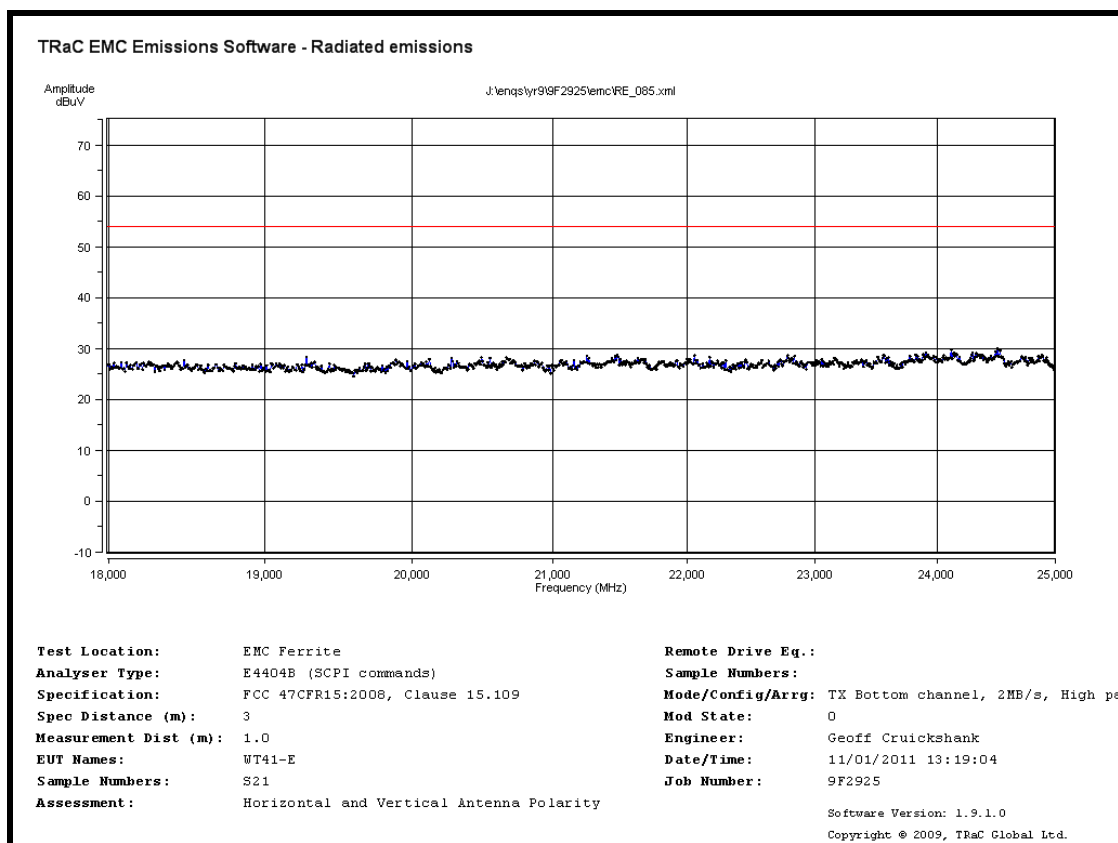


## Radiated Spurious emissions 5 GHz to 12 GHz – 2402MHz – 2Mbps for S21

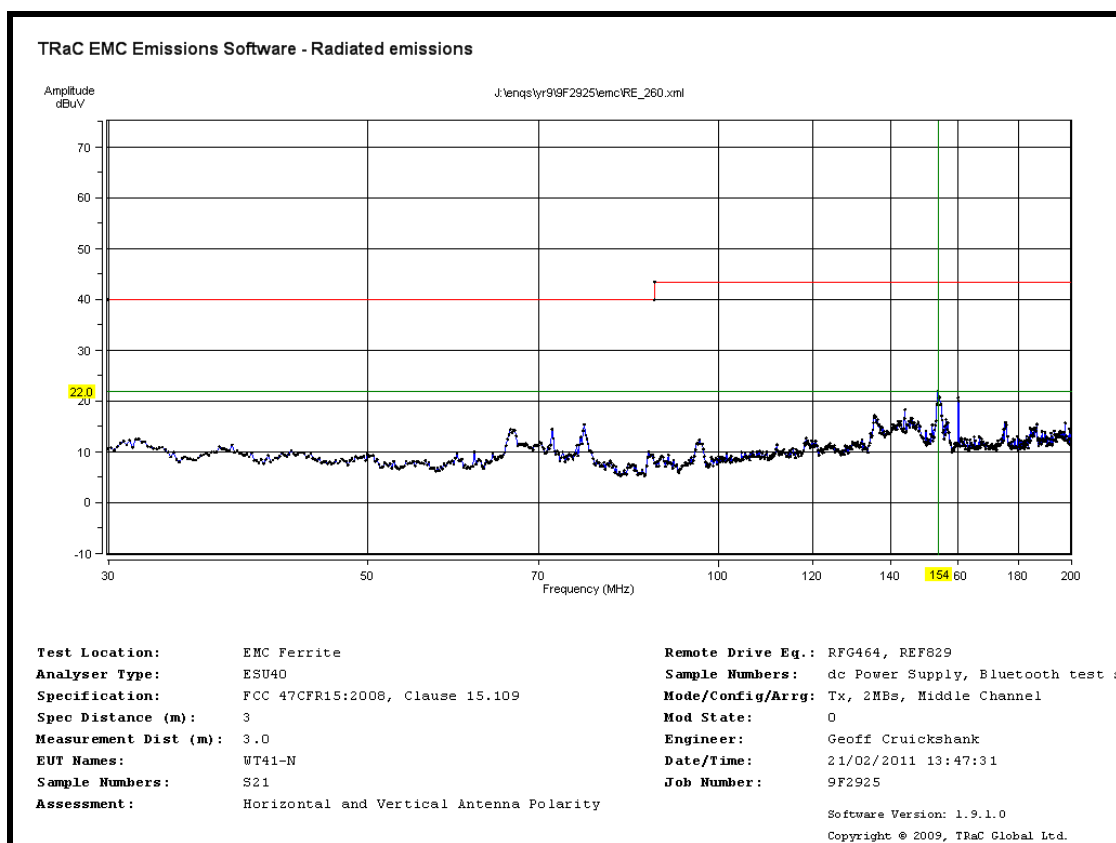




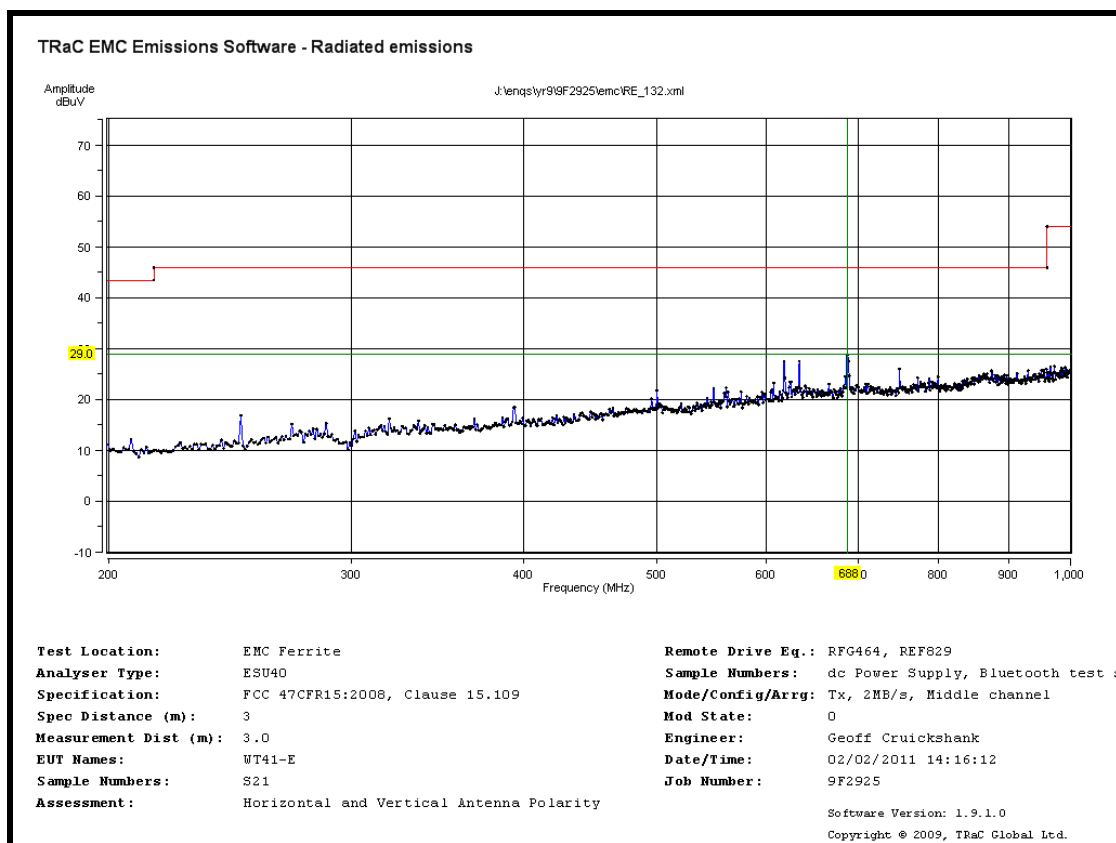
Radiated Spurious emissions 12 GHz to 18GHz – 2402MHz – 2Mbps for S21



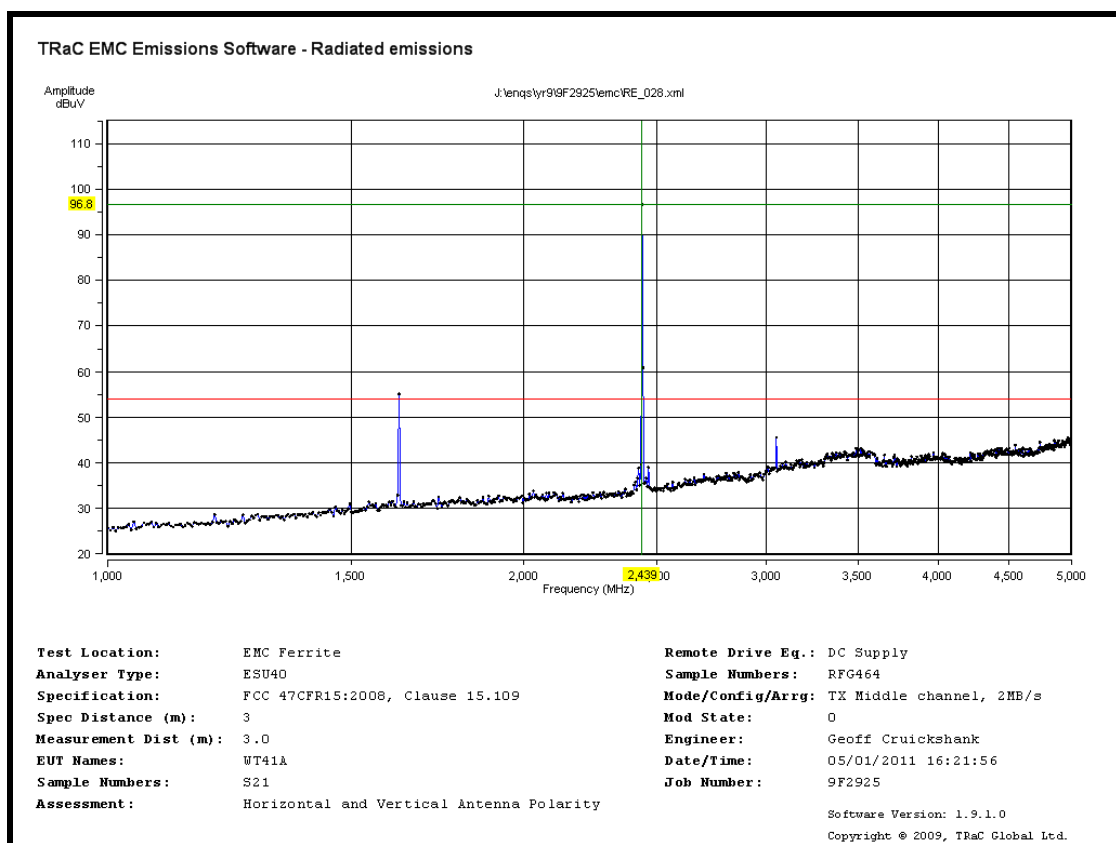
Radiated Spurious emissions 18 GHz to 25 GHz – 2402MHz – 2Mbps for S21



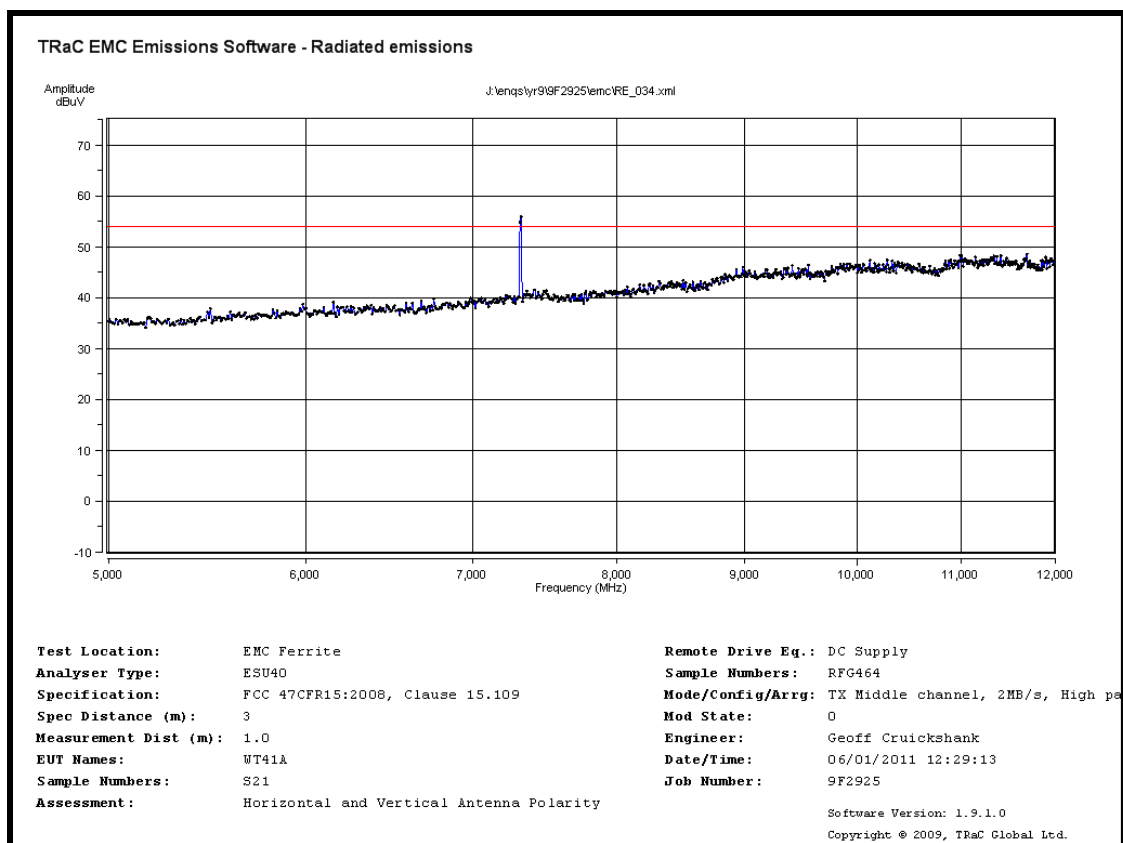
Radiated Spurious emissions 30 MHz to 200 MHz – 2441MHz – 2Mbps for S21



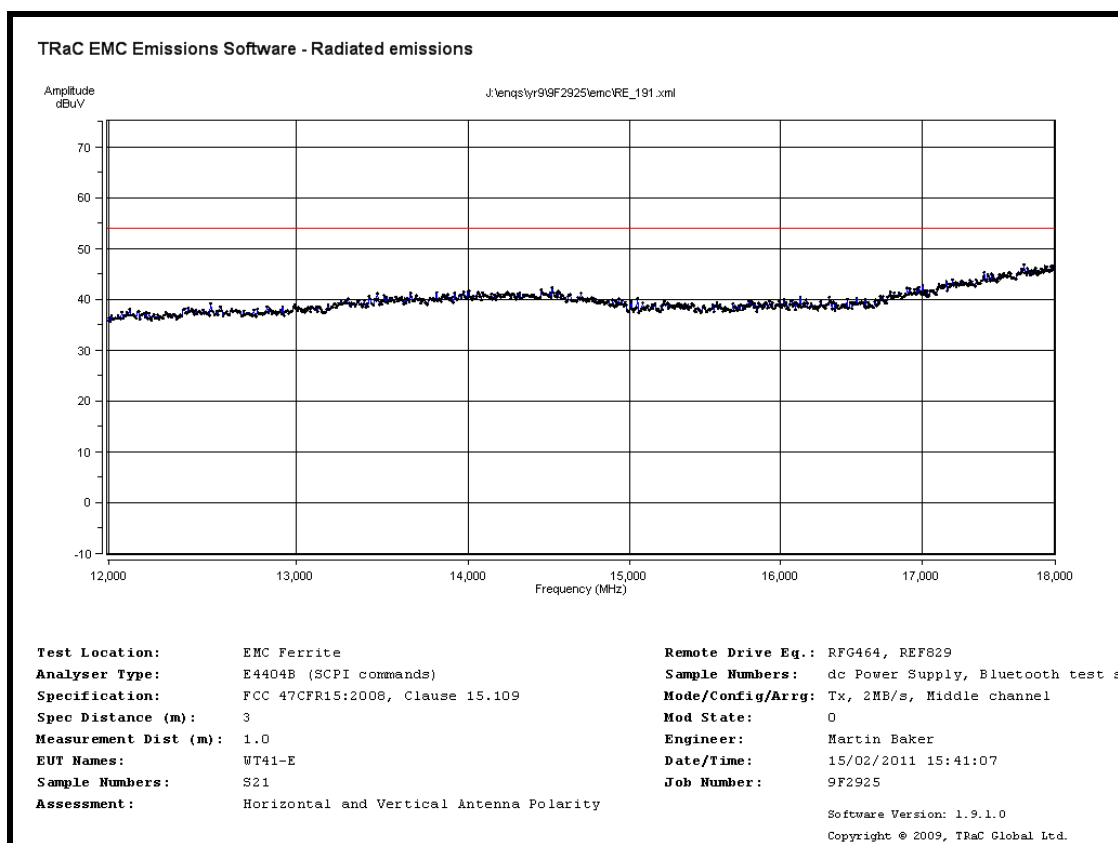
Radiated Spurious emissions 200 MHz to 1 GHz – 2441MHz – 2Mbps for S21



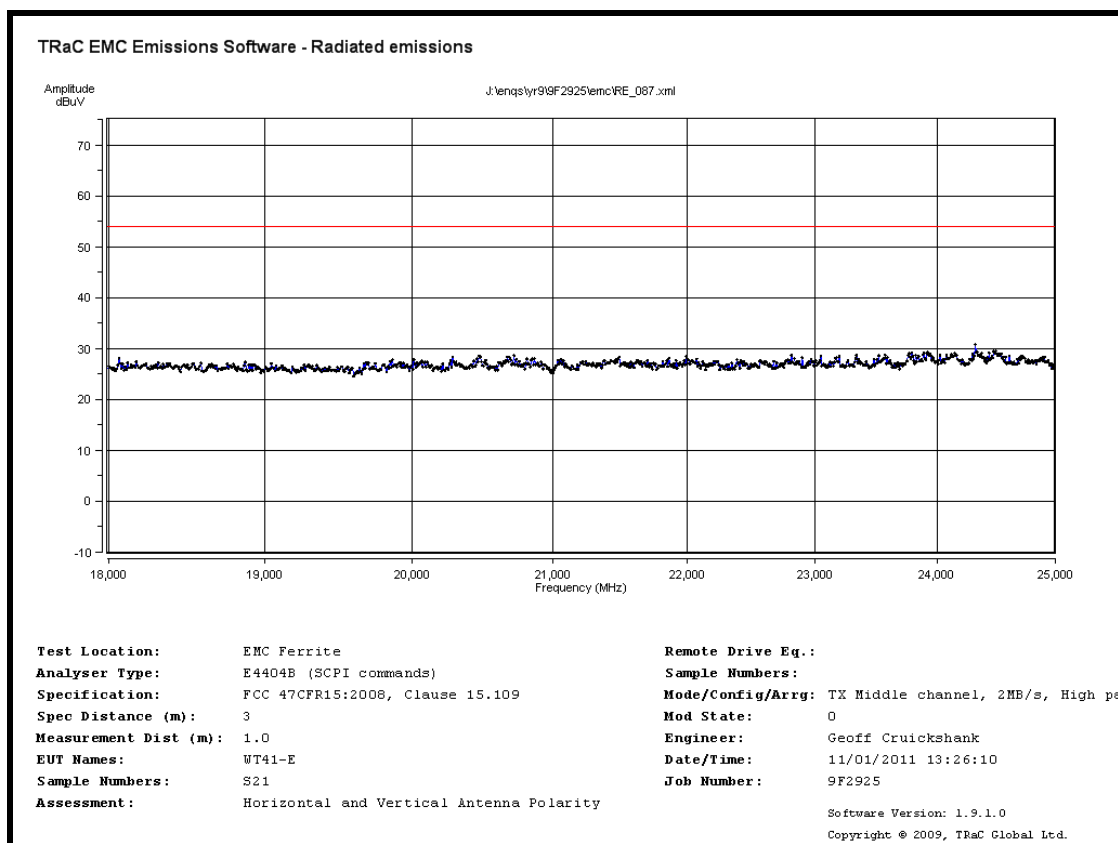
## Radiated Spurious emissions 1 GHz to 5 GHz – 2441MHz – 2Mbps for S21



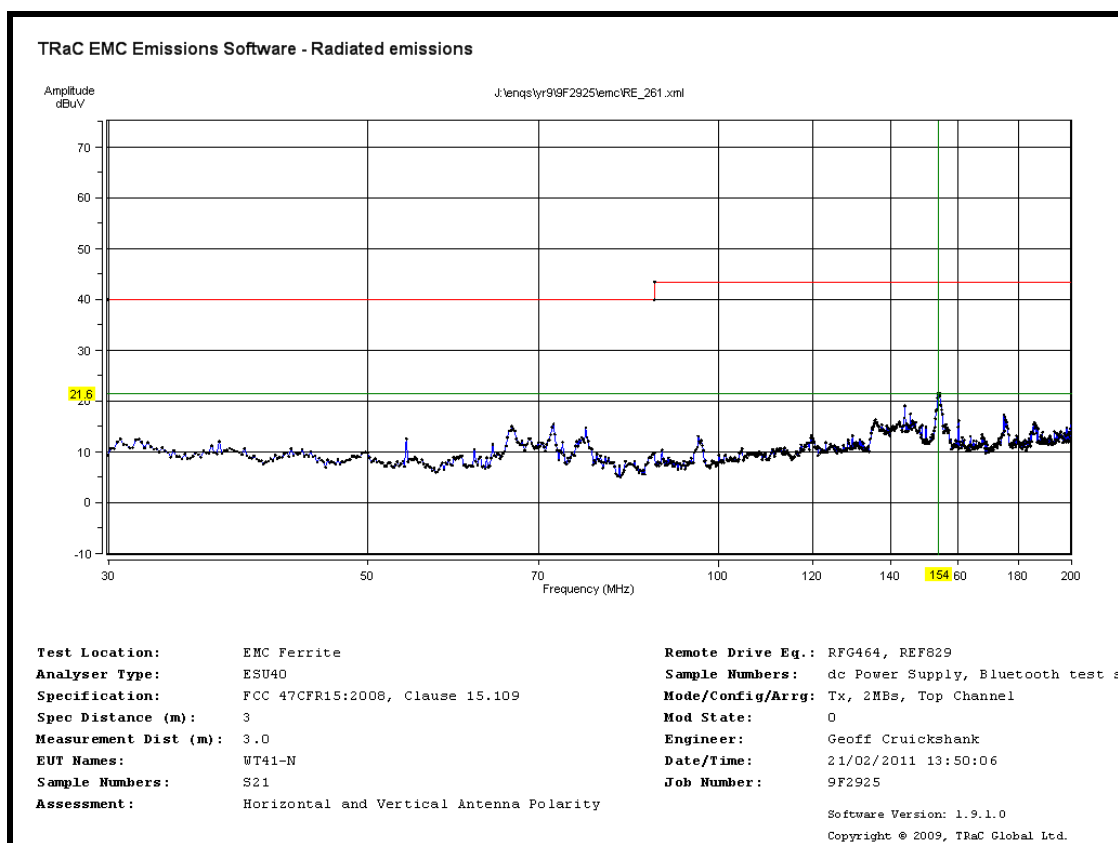
## Radiated Spurious emissions 5 GHz to 12 GHz – 2441MHz – 2Mbps for S21



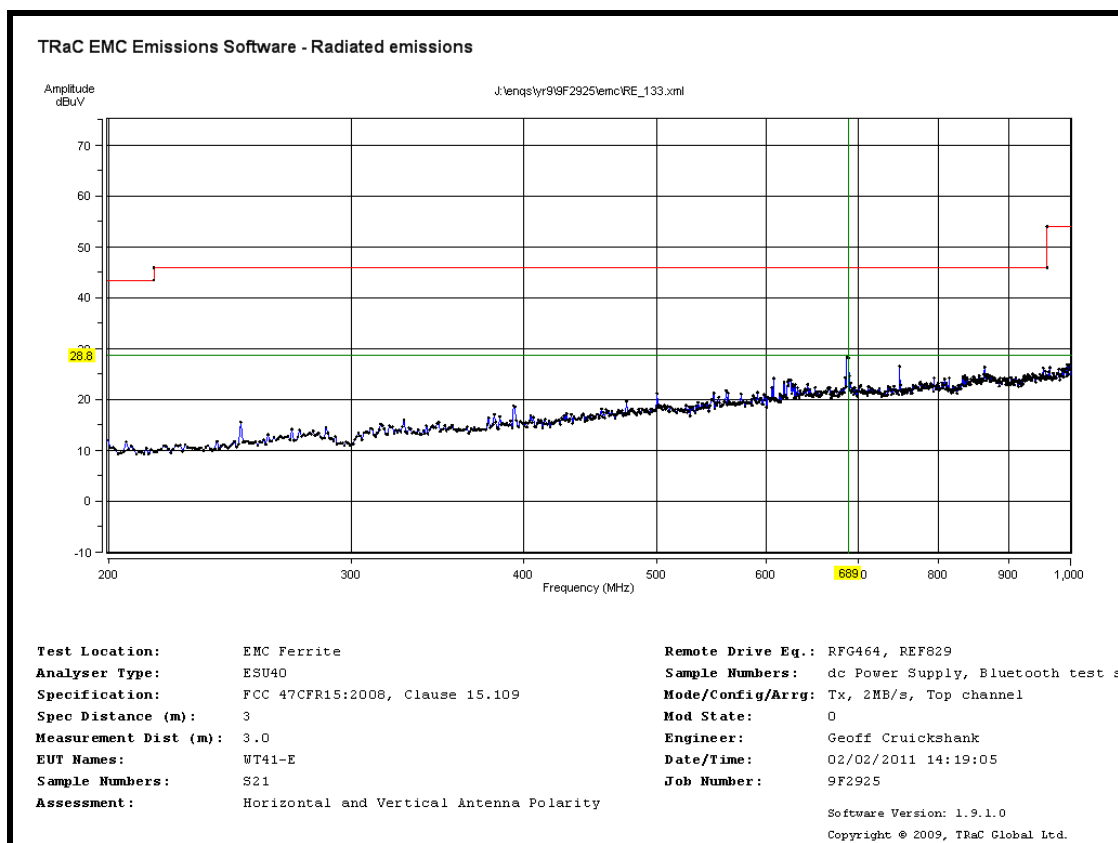
Radiated Spurious emissions 12 GHz to 18GHz – 2441MHz – 2Mbps for S21



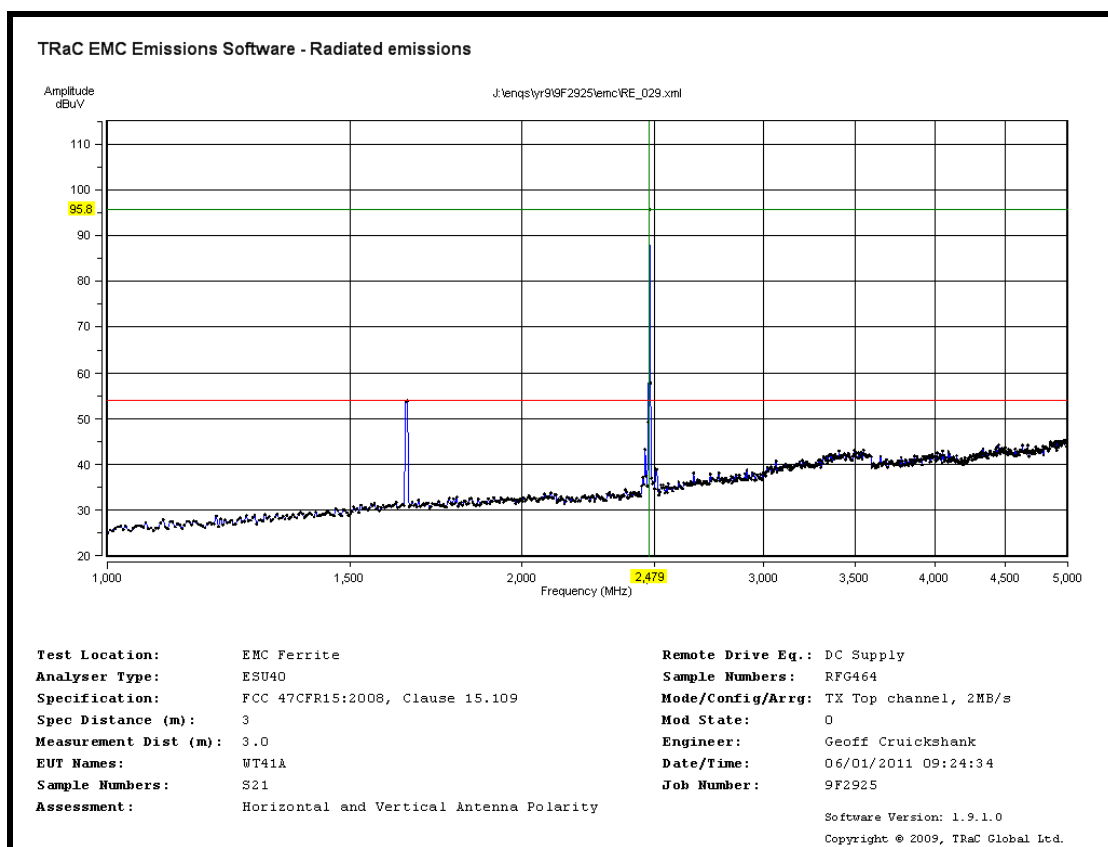
Radiated Spurious emissions 18 GHz to 25 GHz – 2441MHz – 2Mbps for S21



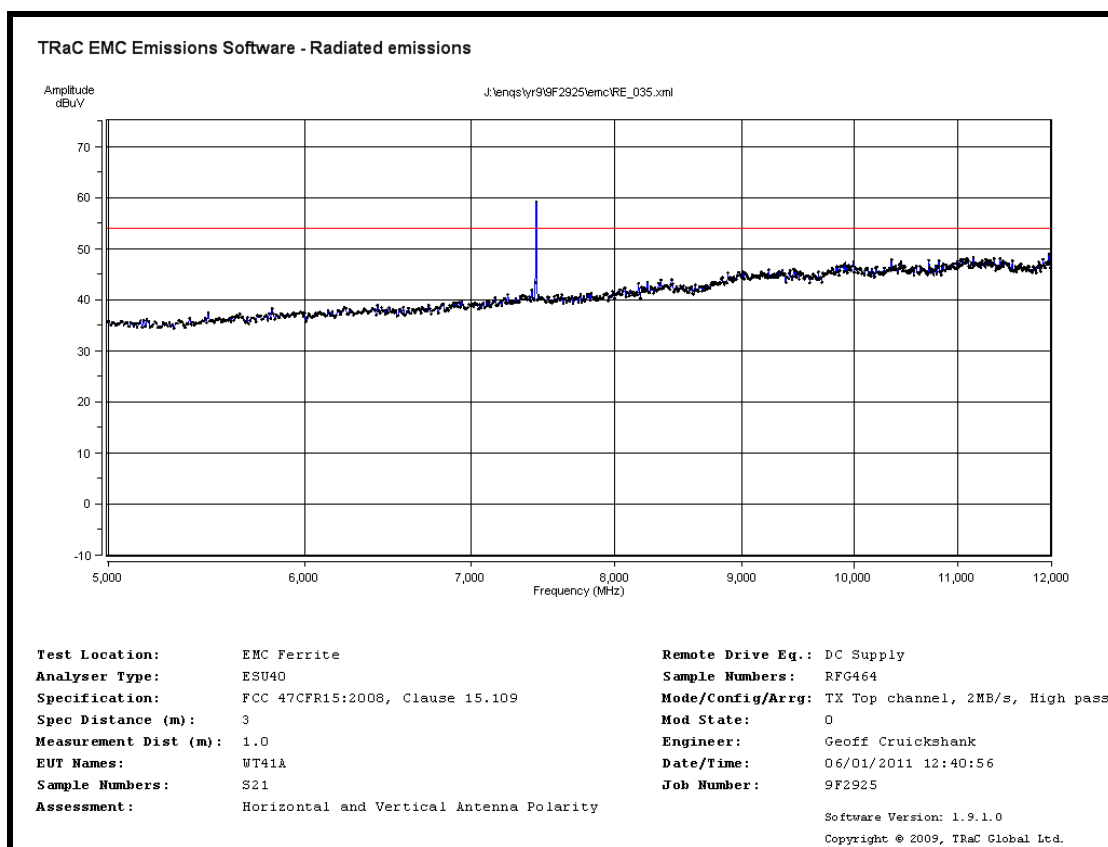
Radiated Spurious emissions 30 MHz to 200 MHz – 2480MHz – 2Mbps for S21



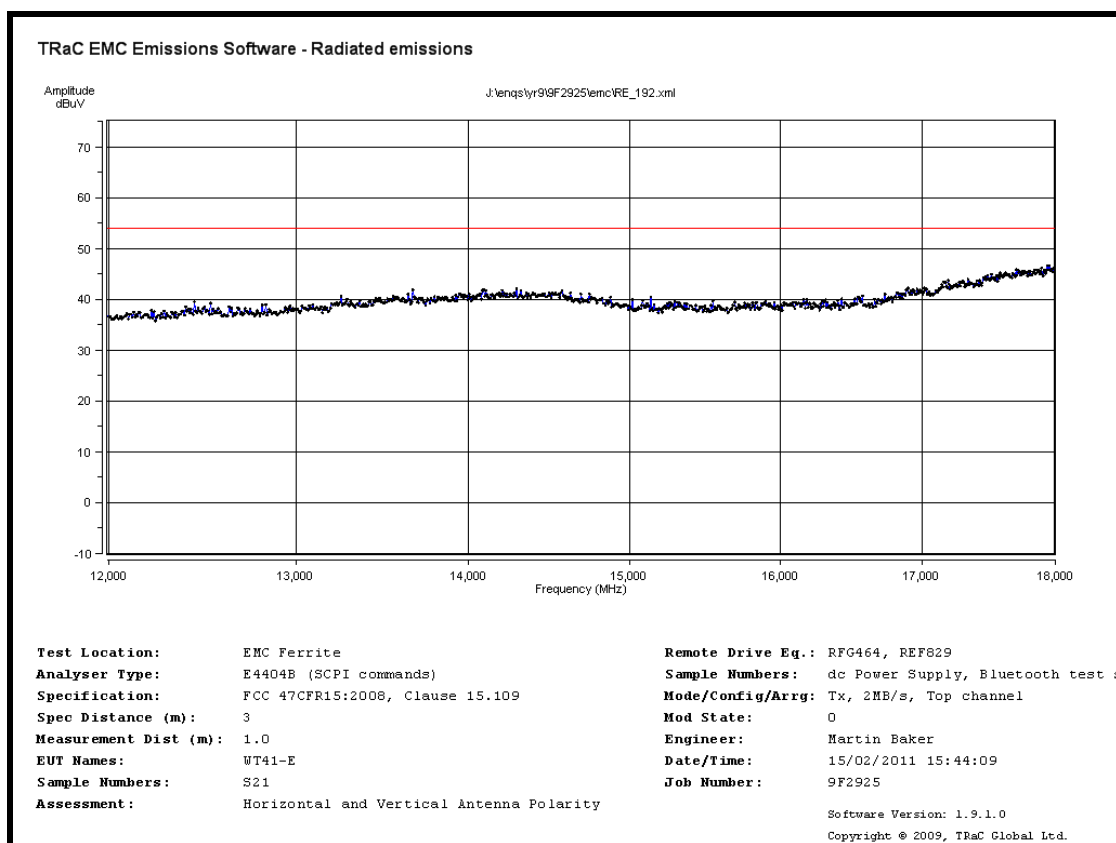
Radiated Spurious emissions 200 MHz to 1 GHz – 2480MHz – 2Mbps for S21



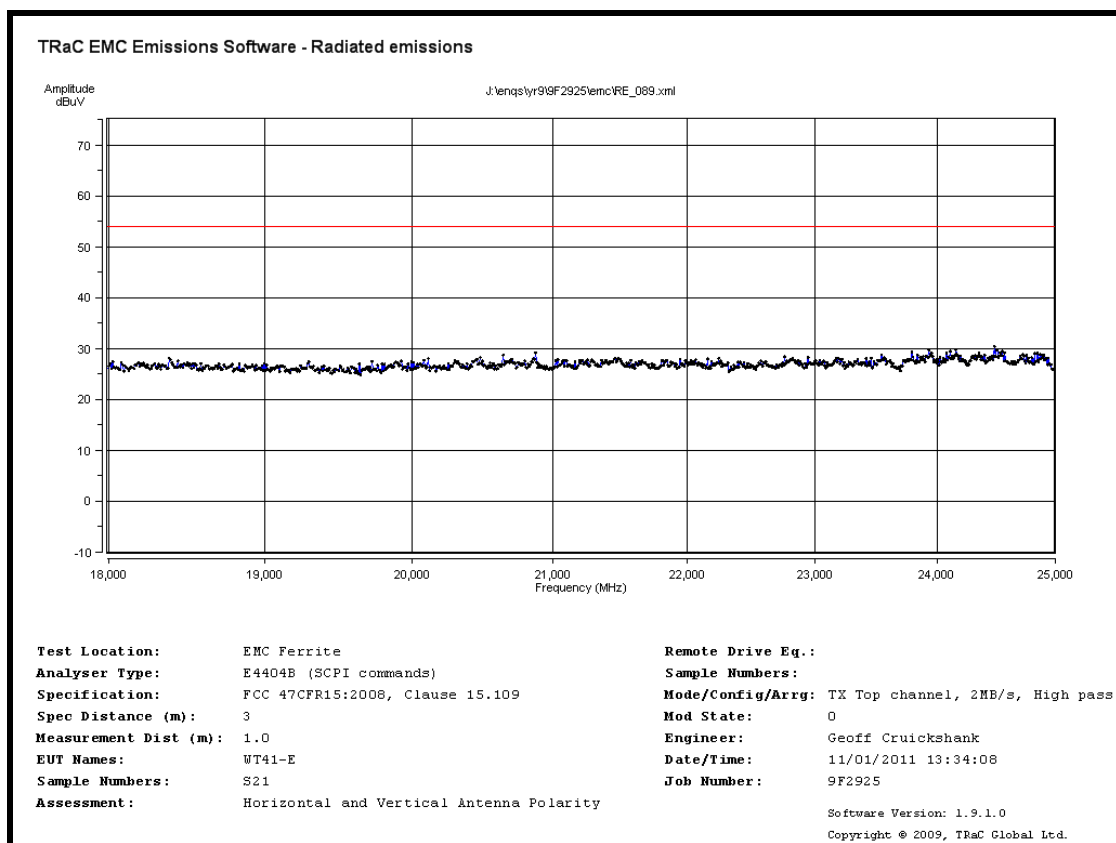
Radiated Spurious emissions 1 GHz to 5 GHz – 2480MHz – 2Mbps for S21



Radiated Spurious emissions 5 GHz to 12 GHz – 2480MHz – 2Mbps for S21

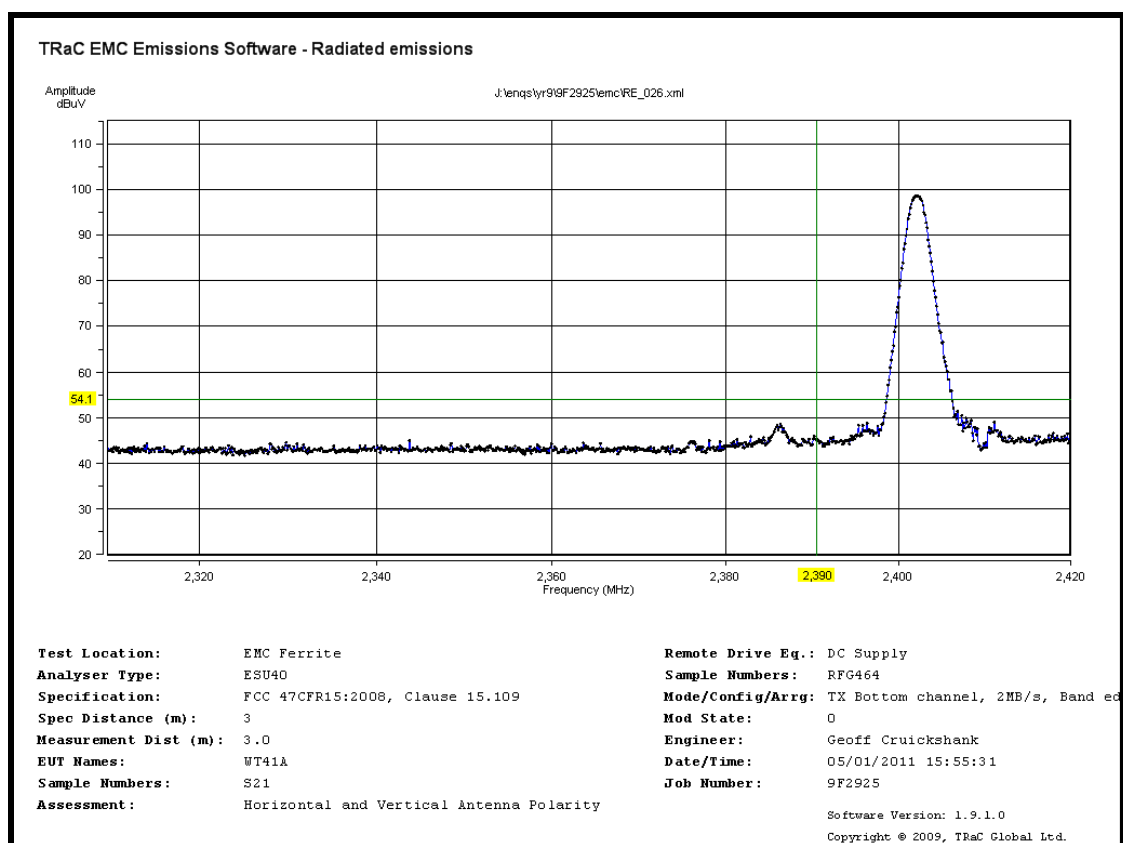


Radiated Spurious emissions 12 GHz to 18GHz – 2480MHz – 2Mbps for S21

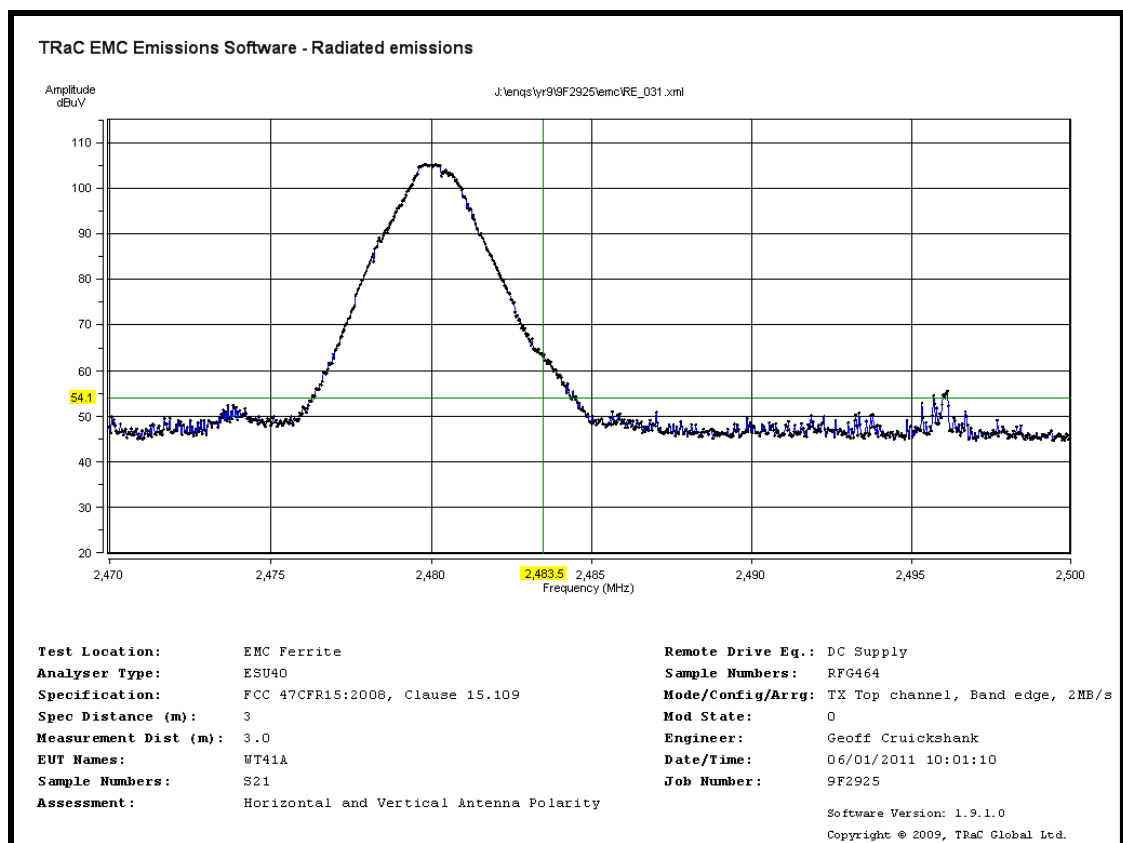


Radiated Spurious emissions 18 GHz to 25 GHz – 2480MHz – 2Mbps for S21

## Radiated Bandedge Compliance – Peak plot to average limit



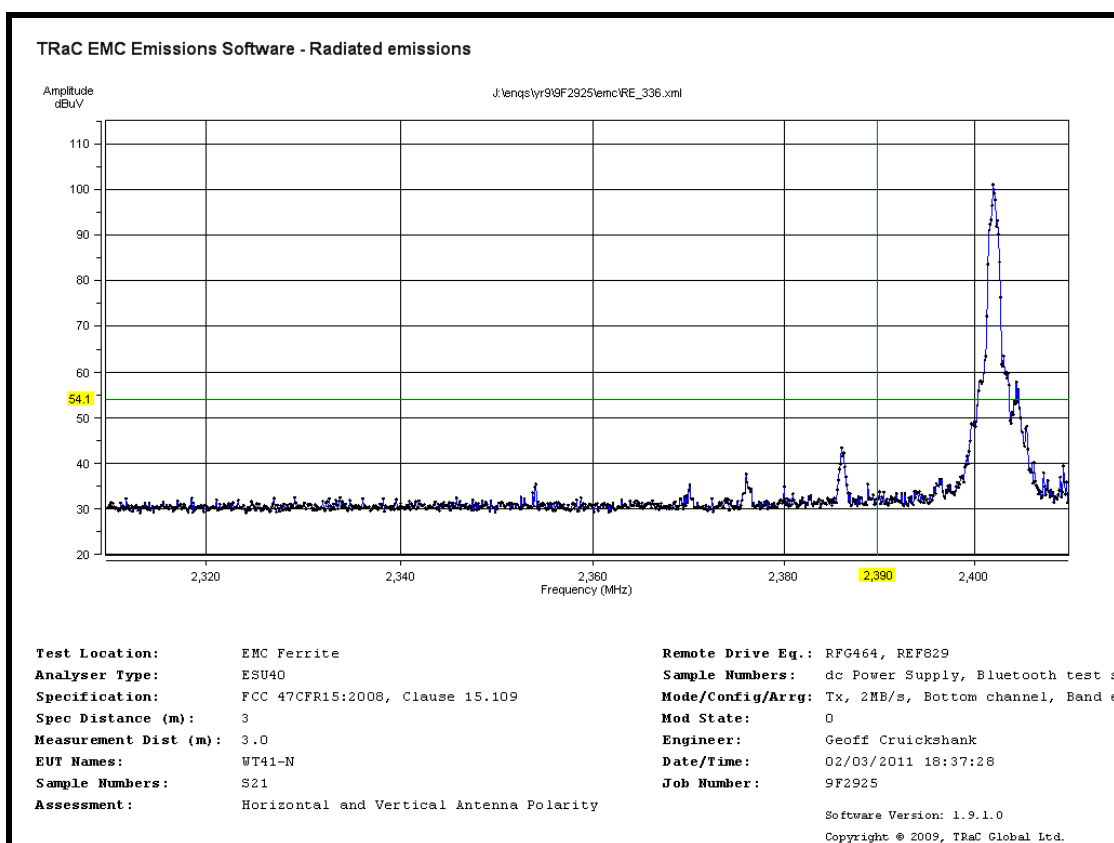
Lower Bandedge



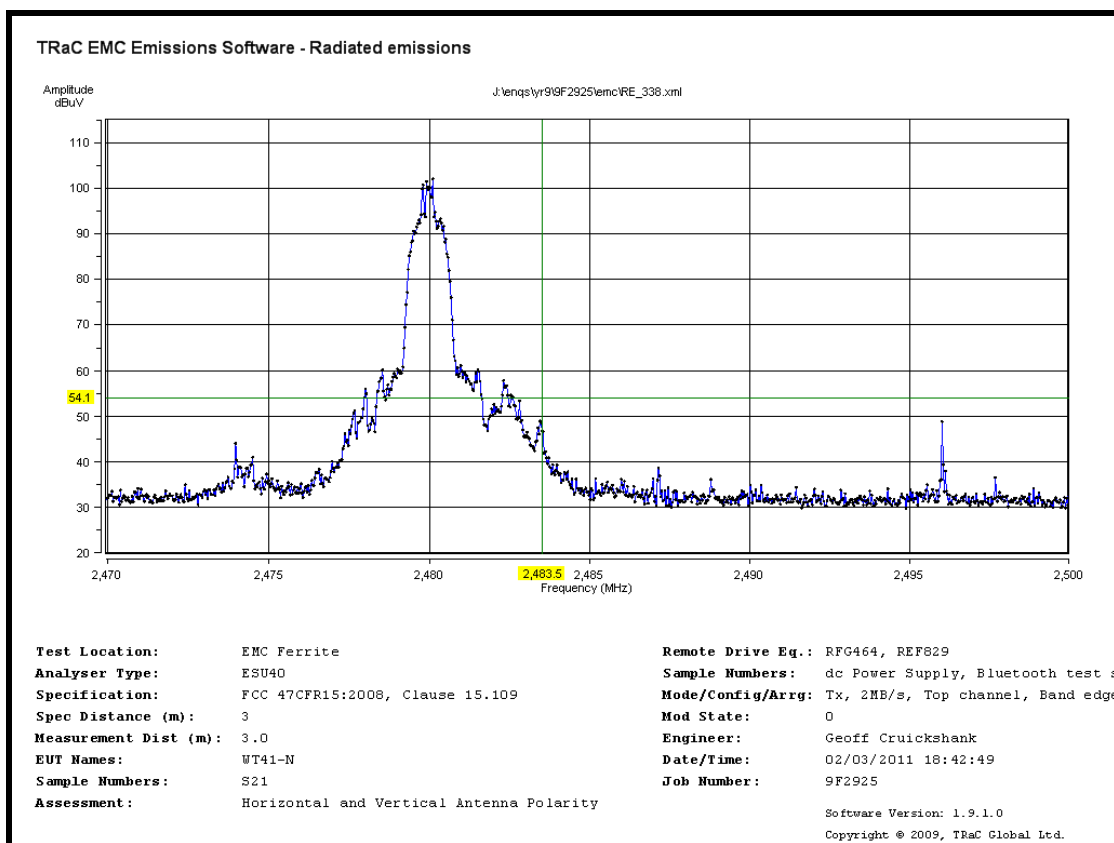
Upper Bandedge



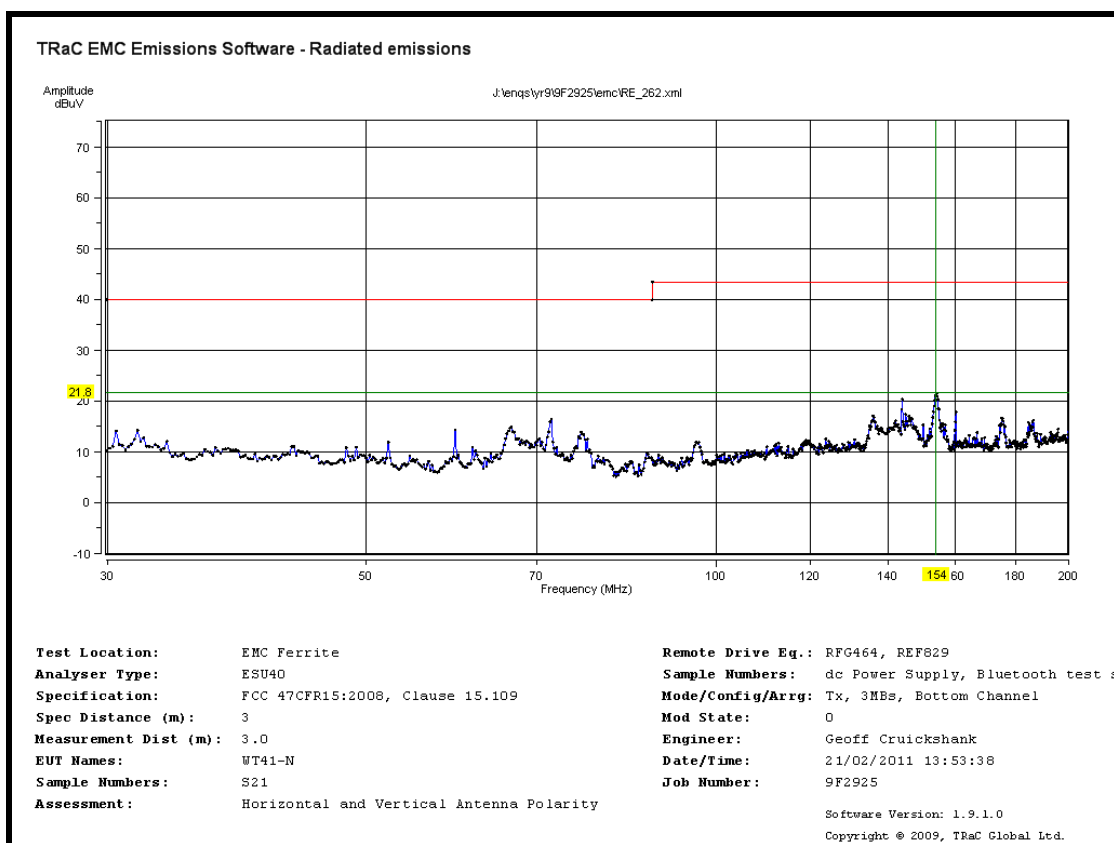
## Radiated Bandedge Compliance – Average plot to average limit



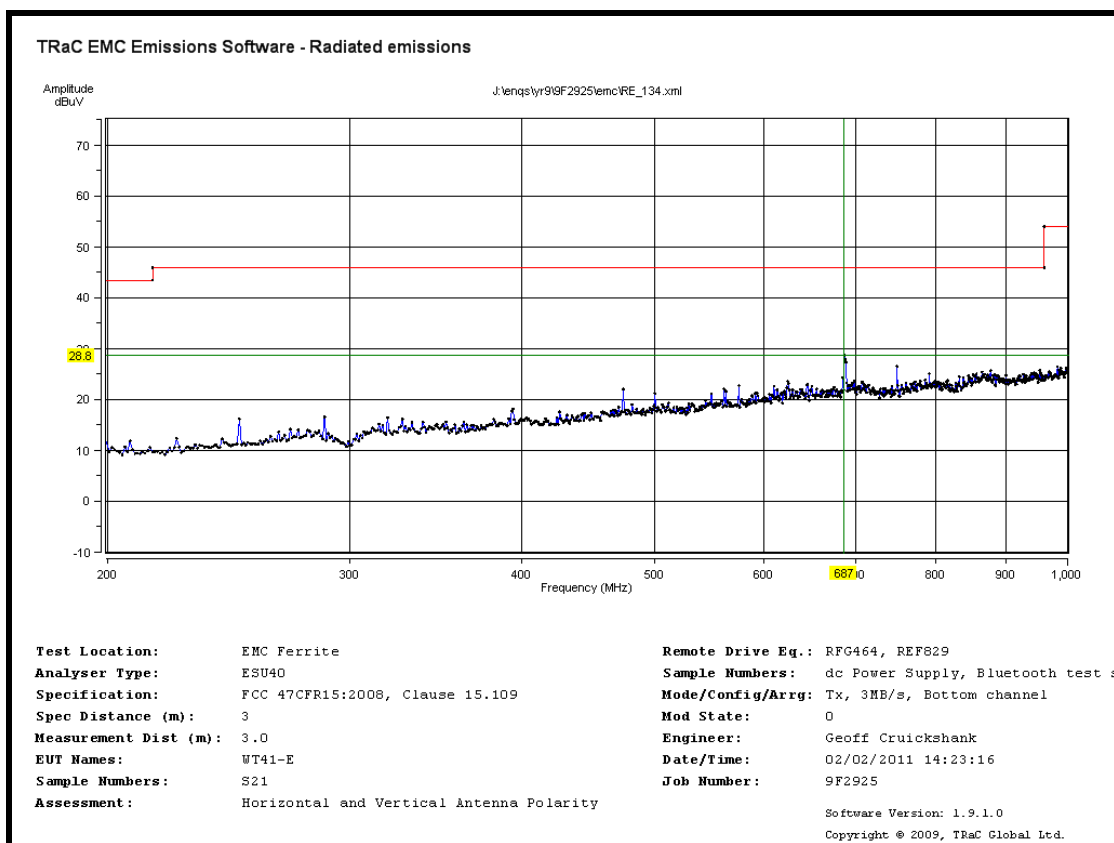
Lower Bandedge



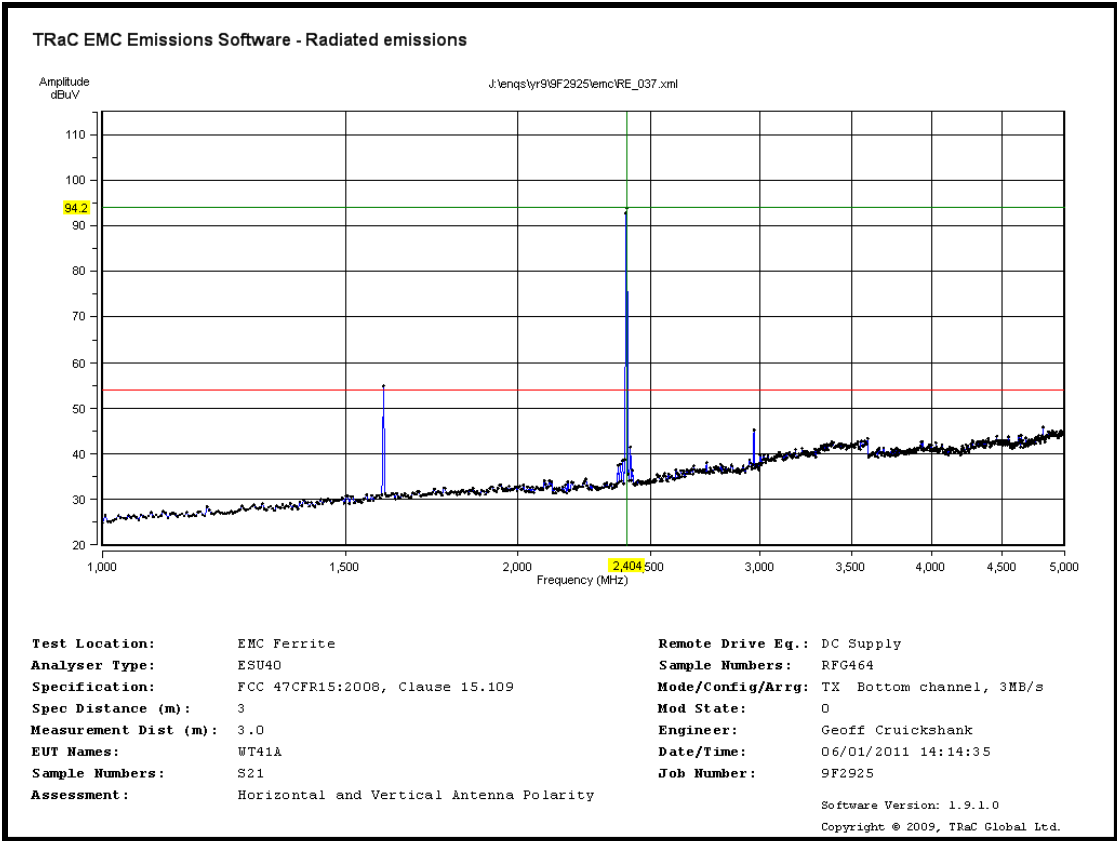
Upper Bandedge



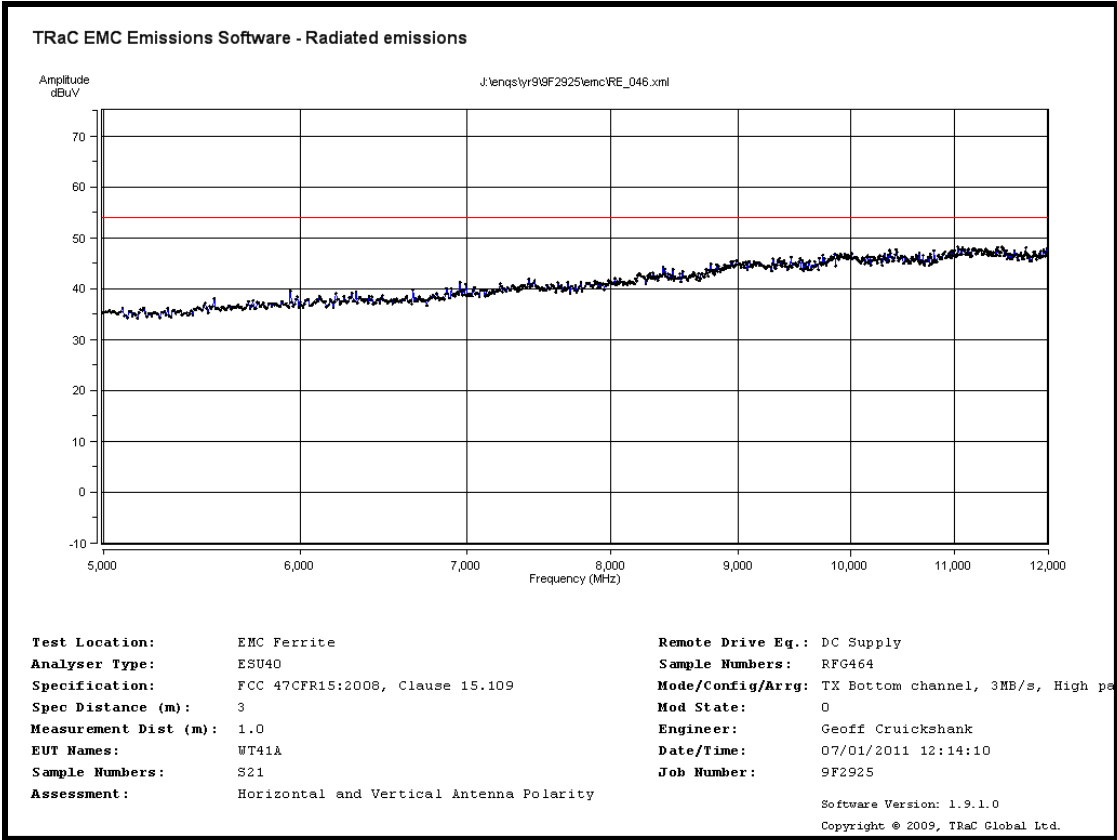
Radiated Spurious emissions 30 MHz to 200 MHz – 2402MHz – 3Mbps for S21



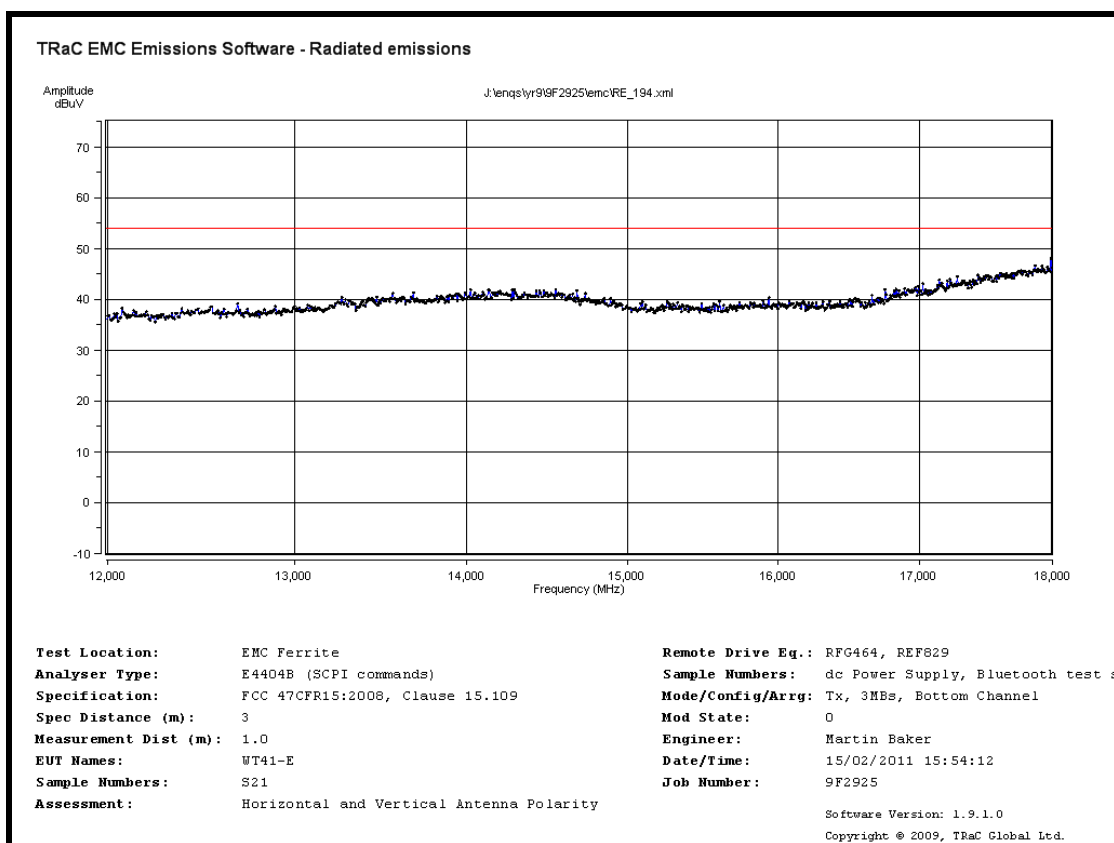
Radiated Spurious emissions 200 MHz to 1 GHz – 2402MHz – 3Mbps for S21



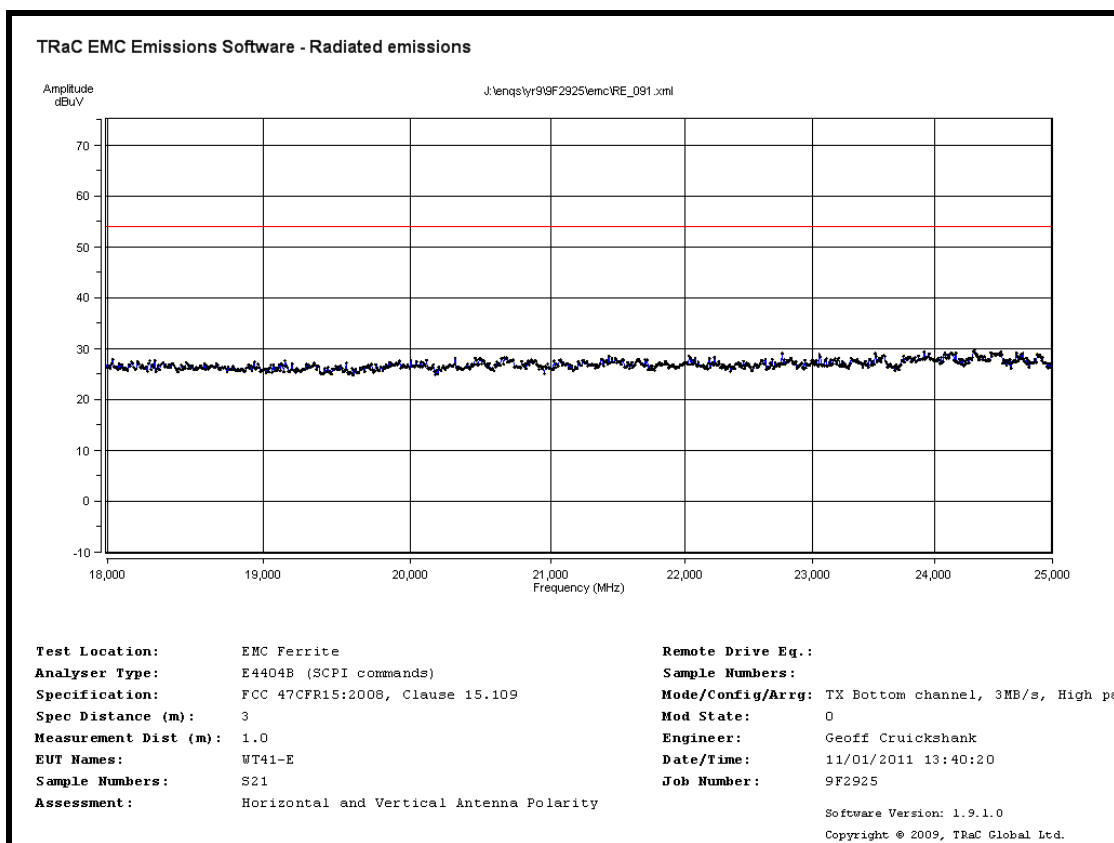
Radiated Spurious emissions 1 GHz to 5 GHz – 2402MHz – 3Mbps for S21



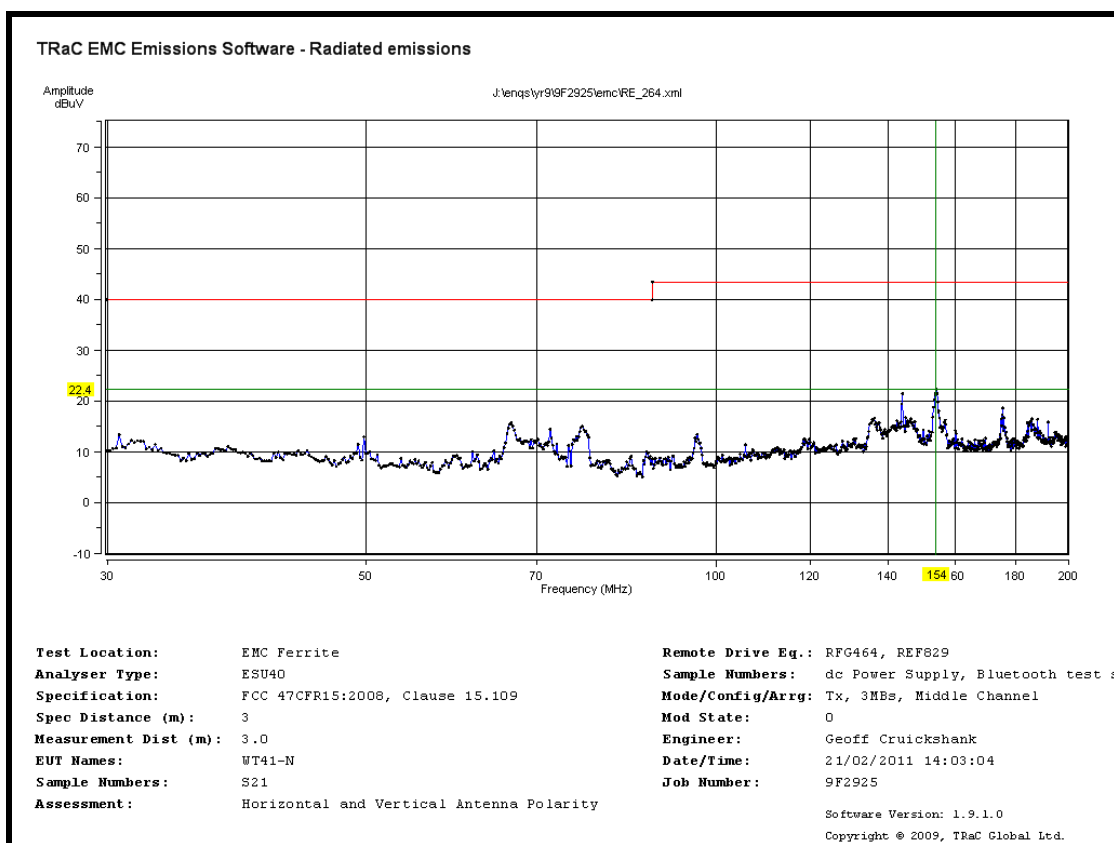
Radiated Spurious emissions 5 GHz to 12 GHz – 2402MHz – 3Mbps for S21



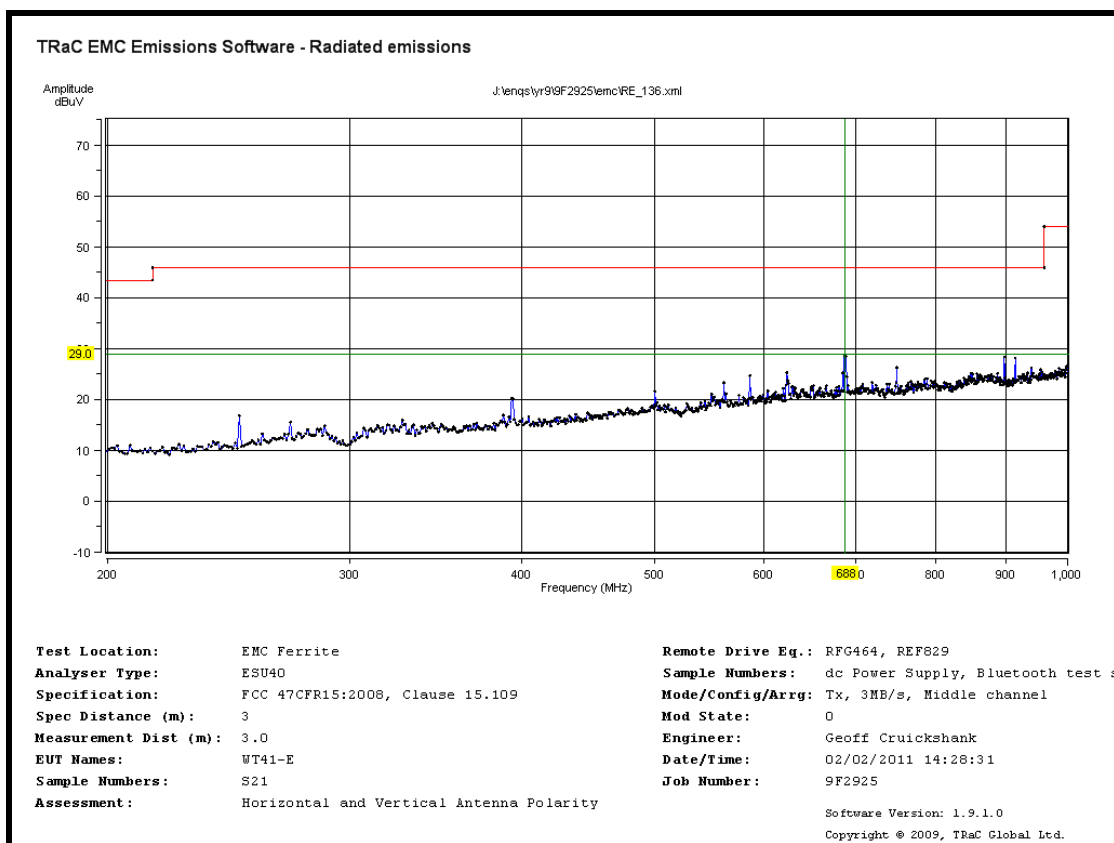
Radiated Spurious emissions 12 GHz to 18GHz – 2402MHz – 3Mbps for S21



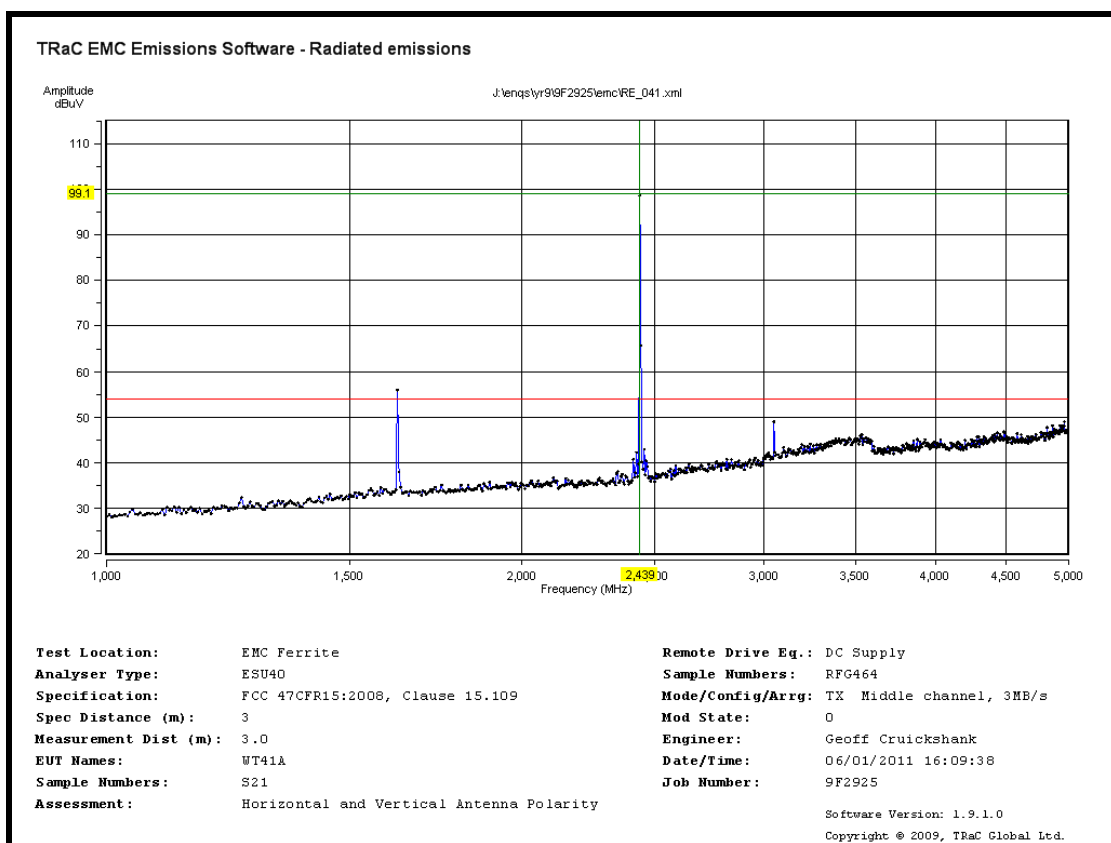
Radiated Spurious emissions 18 GHz to 25 GHz – 2402MHz – 3Mbps for S21



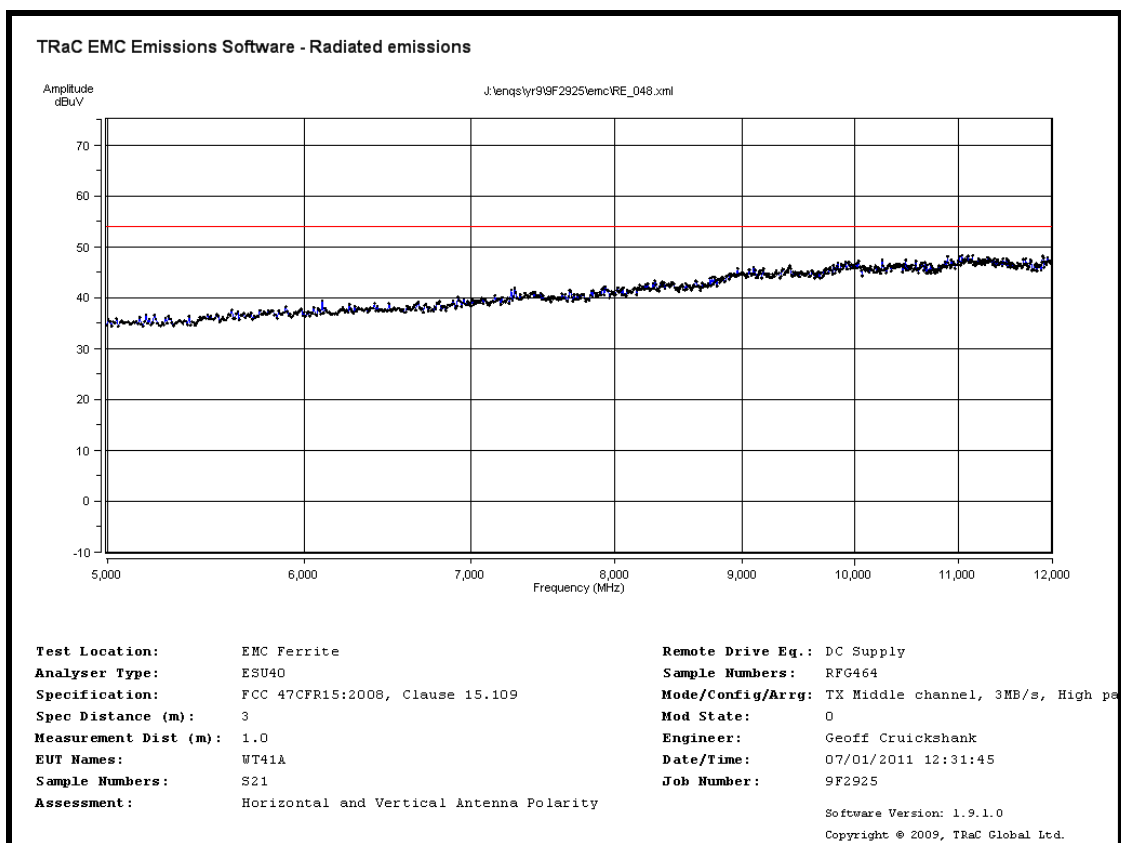
Radiated Spurious emissions 30 MHz to 200MHz – 2441MHz – 3Mbps for S21



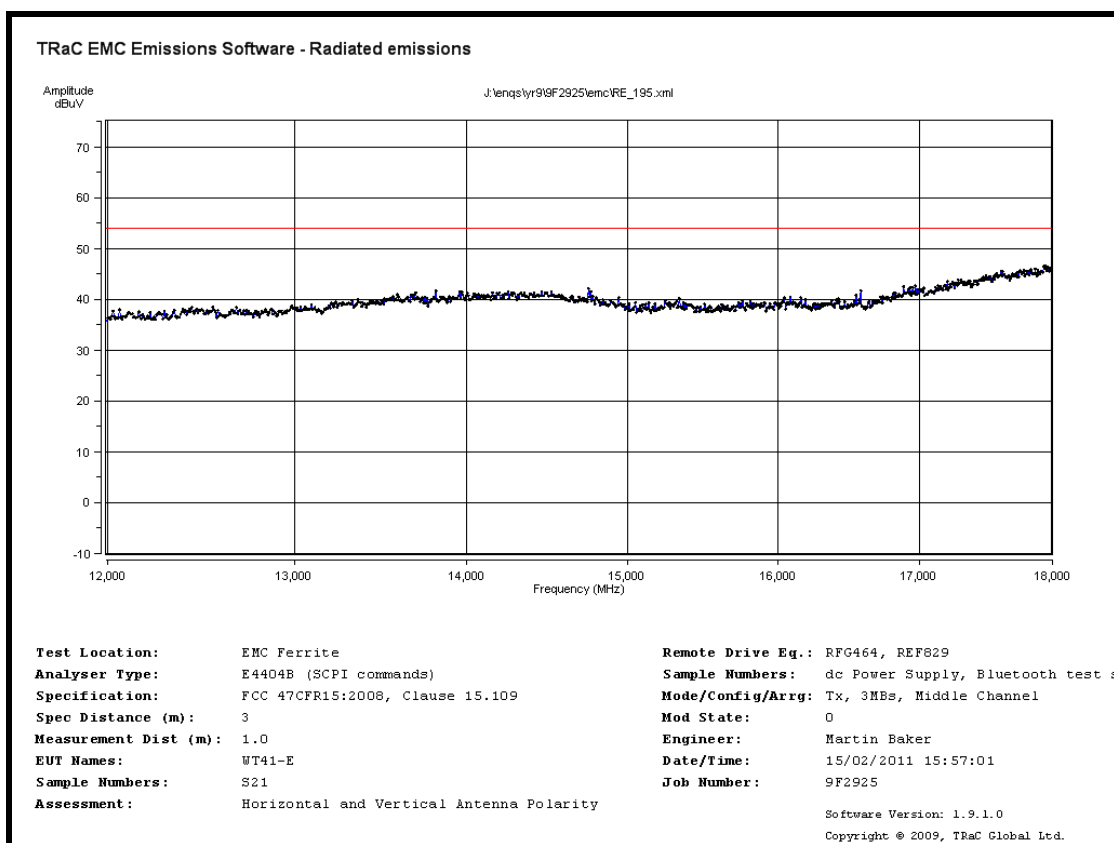
Radiated Spurious emissions 200 MHz to 1GHz – 2441MHz – 3Mbps for S21



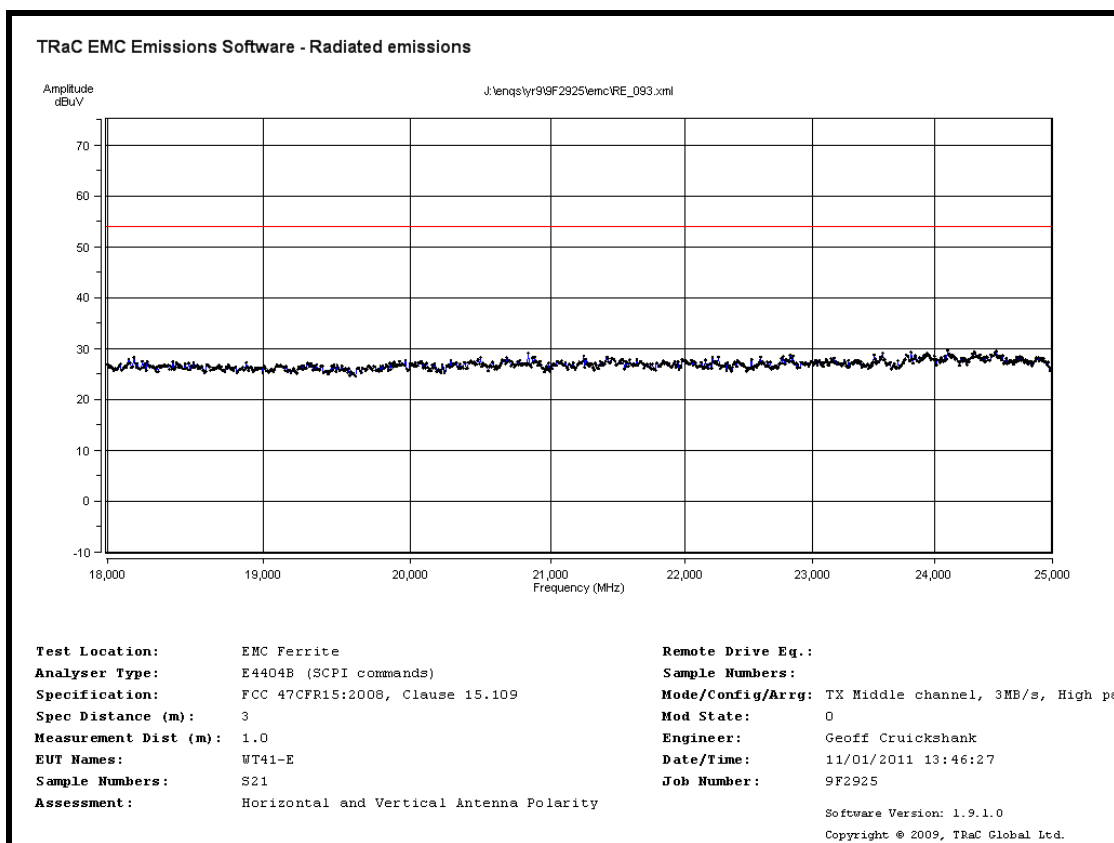
Radiated Spurious emissions 1 GHz to 5 GHz – 2441MHz – 3Mbps for S21



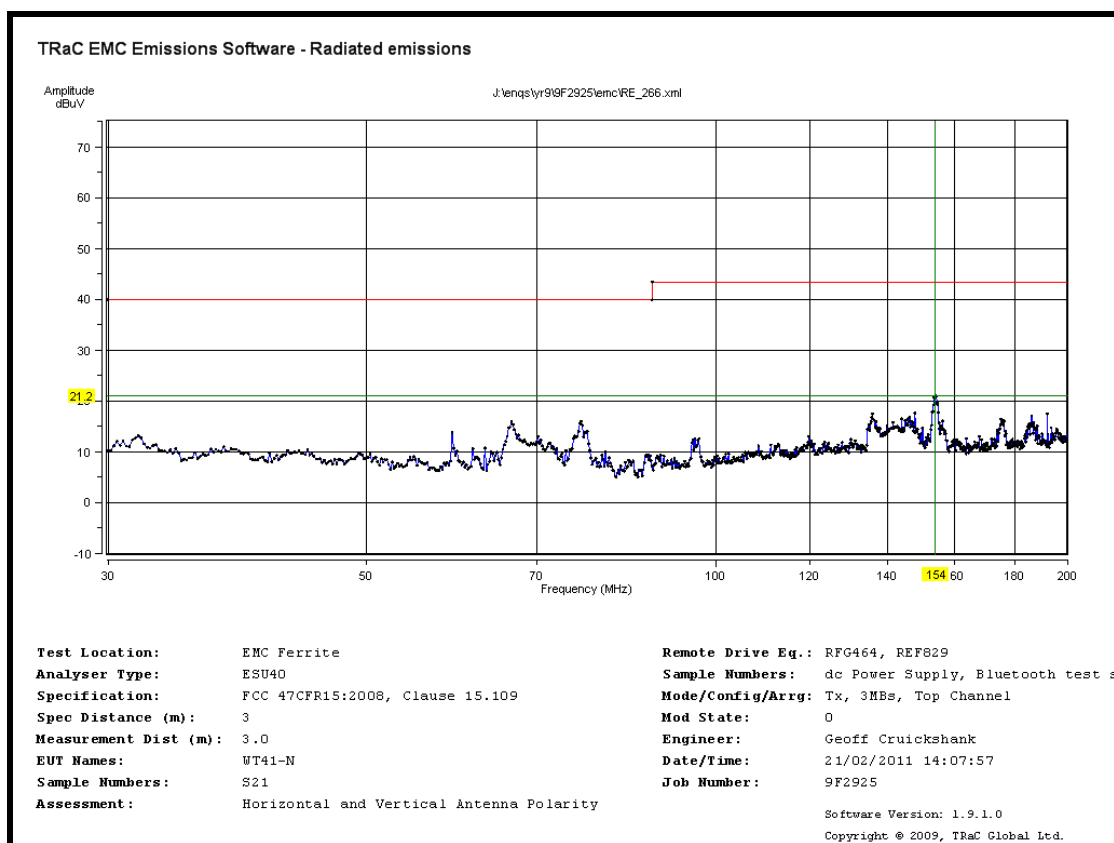
Radiated Spurious emissions 5 GHz to 12 GHz – 2441MHz – 3Mbps for S21



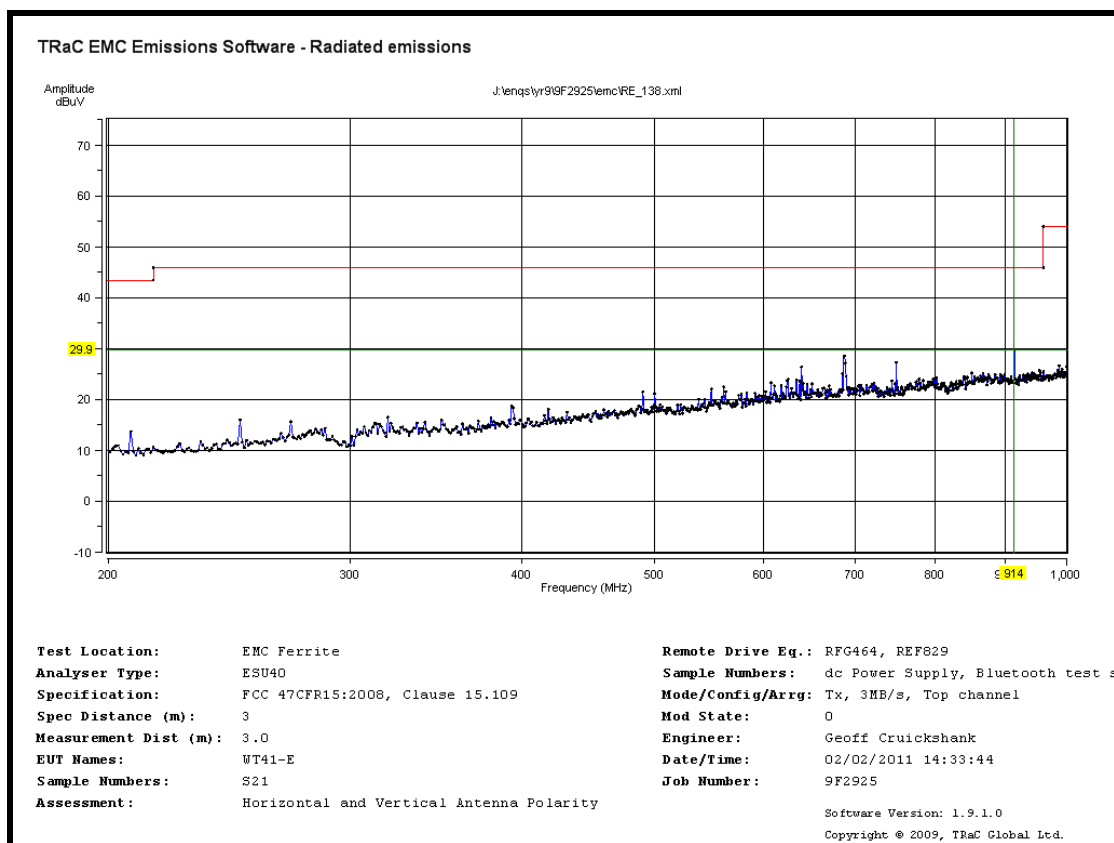
Radiated Spurious emissions 12 GHz to 18GHz – 2441MHz – 3Mbps for S21



Radiated Spurious emissions 18 GHz to 25 GHz – 2441MHz – 3Mbps for S21

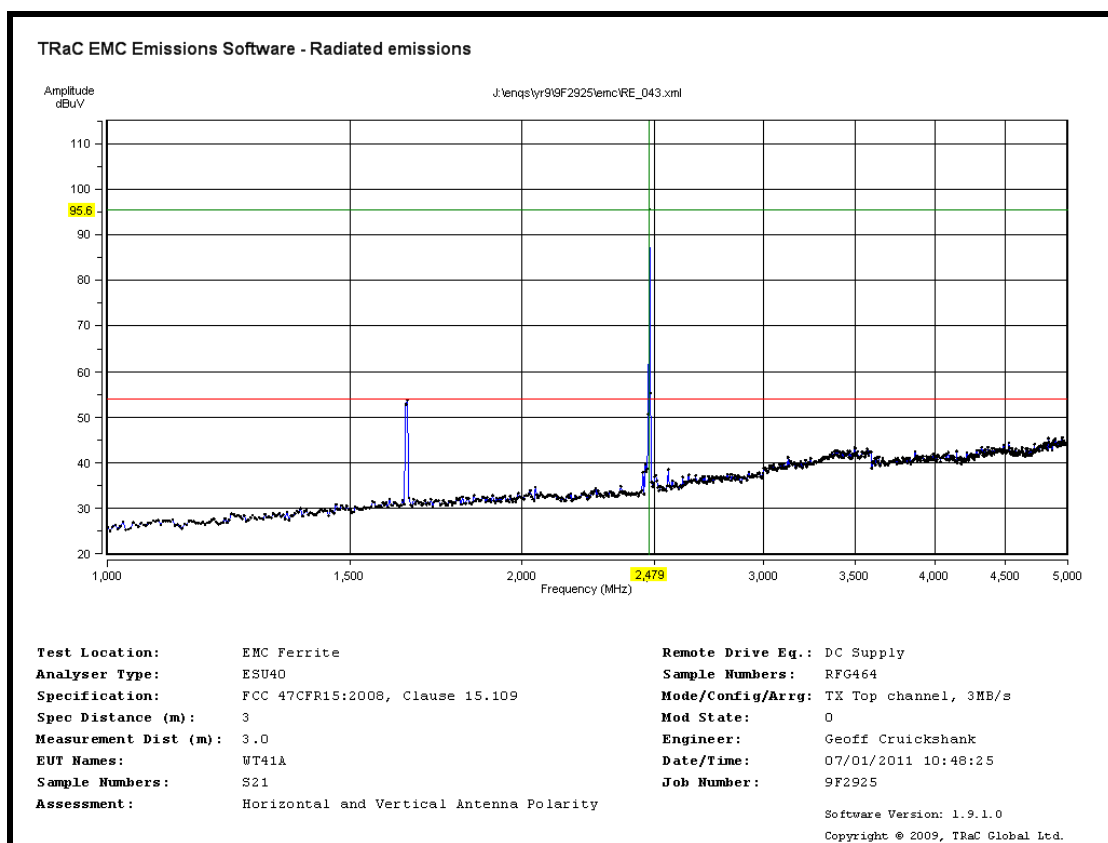


Radiated Spurious emissions 30 MHz to 200 MHz – 2480MHz – 3Mbps for S21

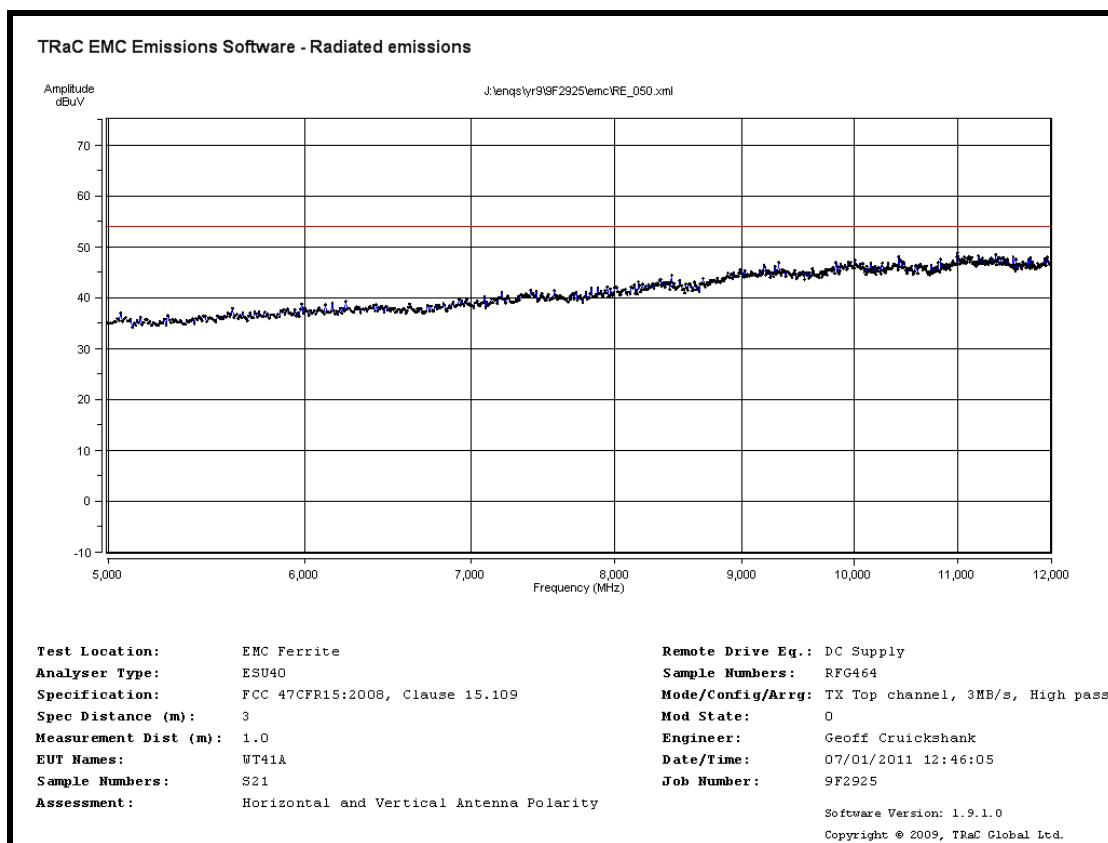


Radiated Spurious emissions 200 MHz to 1 GHz – 2480MHz – 3Mbps for S21

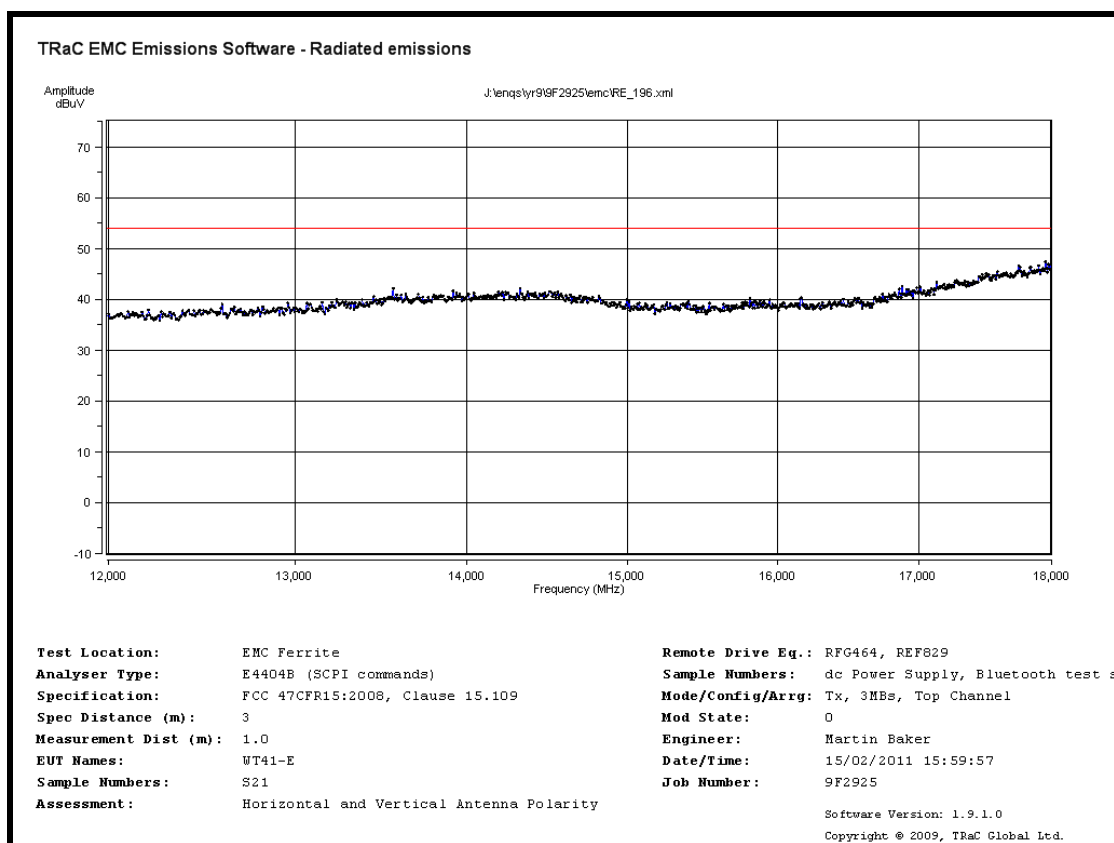




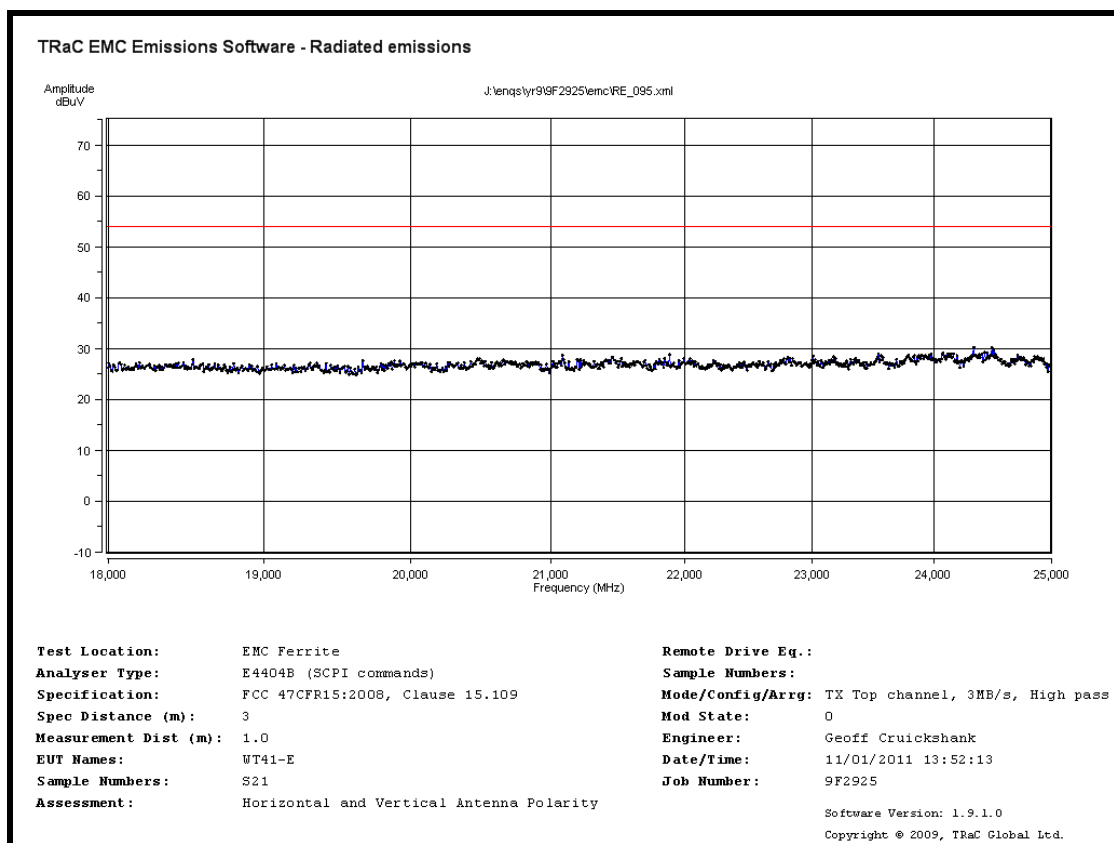
## Radiated Spurious emissions 1 GHz to 5 GHz – 2480MHz – 3Mbps for S21



## Radiated Spurious emissions 5 GHz to 12 GHz – 2480MHz – 3Mbps for S21

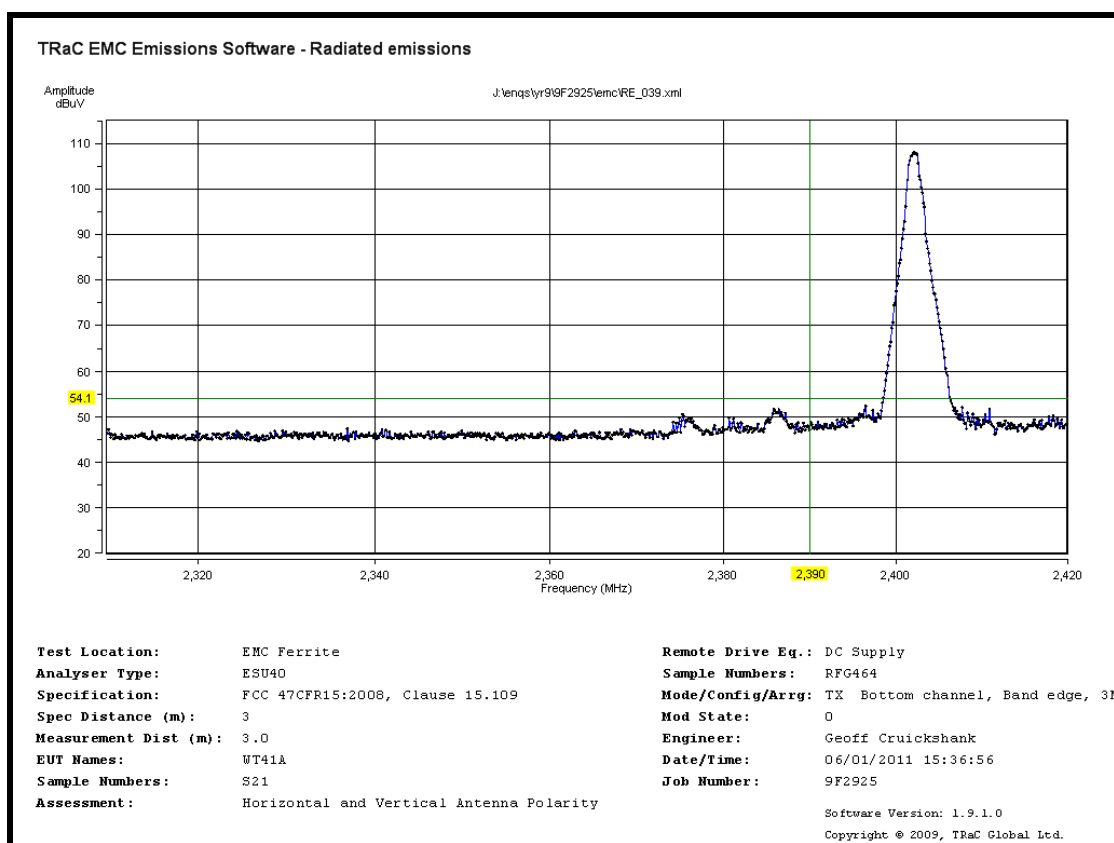


Radiated Spurious emissions 12 GHz to 18GHz – 2480MHz – 3Mbps for S21

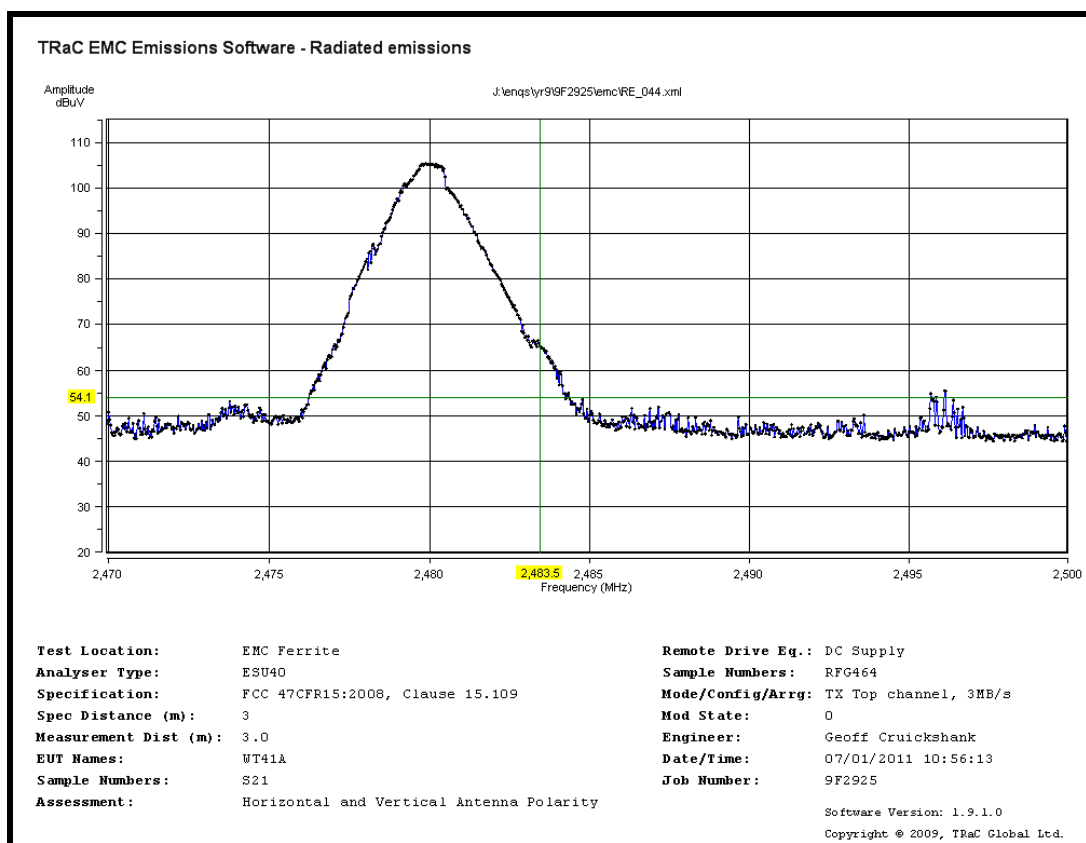


Radiated Spurious emissions 18 GHz to 25 GHz – 2480MHz – 3Mbps for S21

## Radiated Bandedge Compliance – Peak plot to average limit

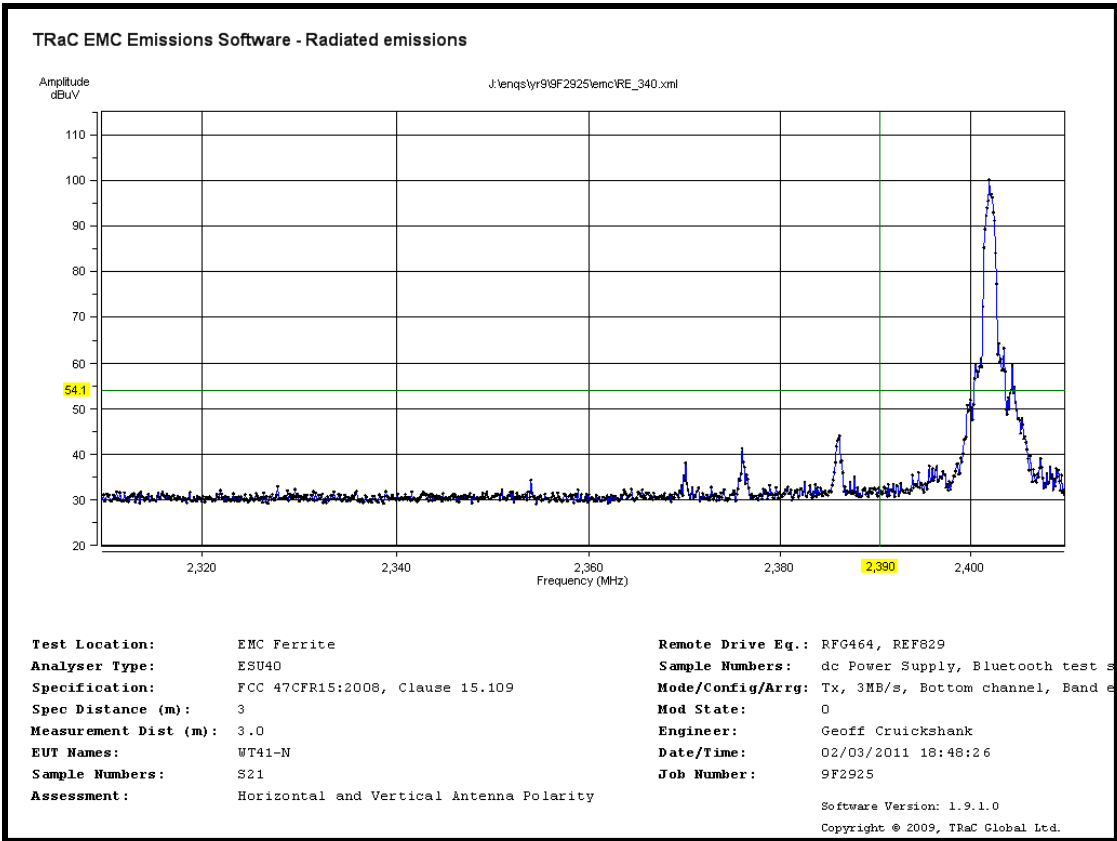


Lower Bandedge

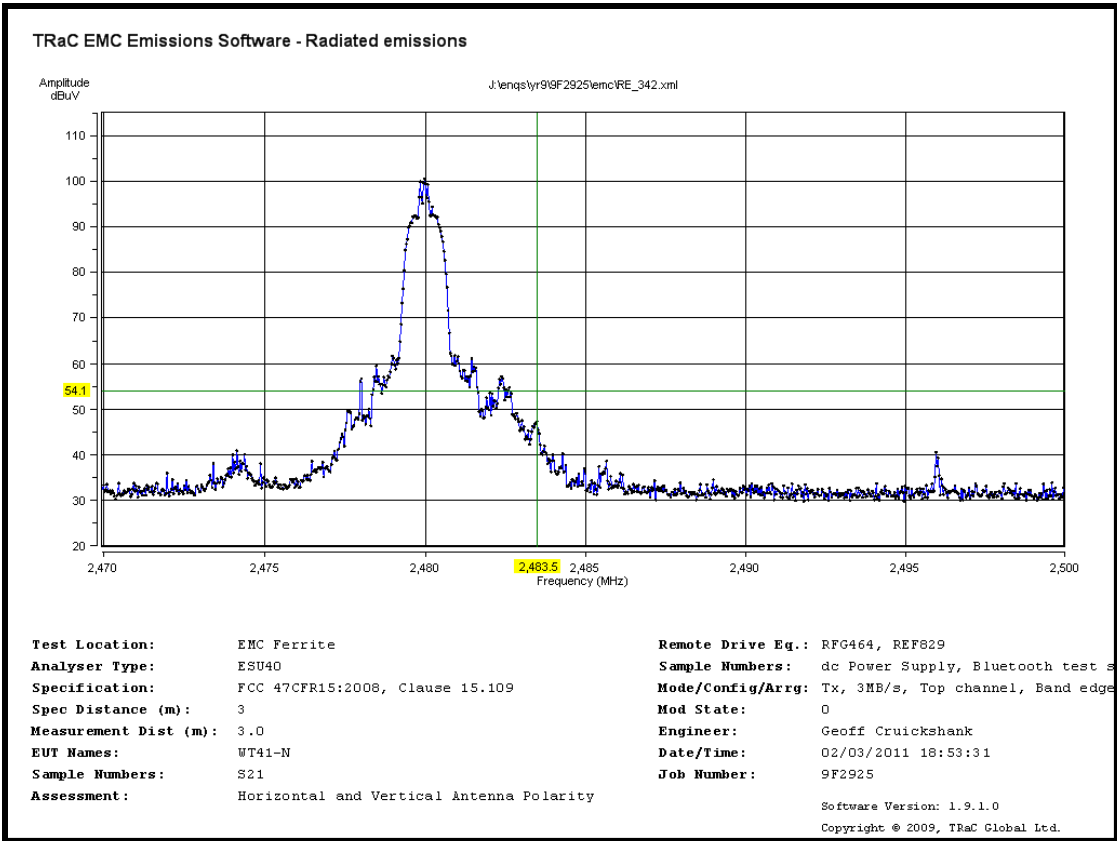


Upper Bandedge

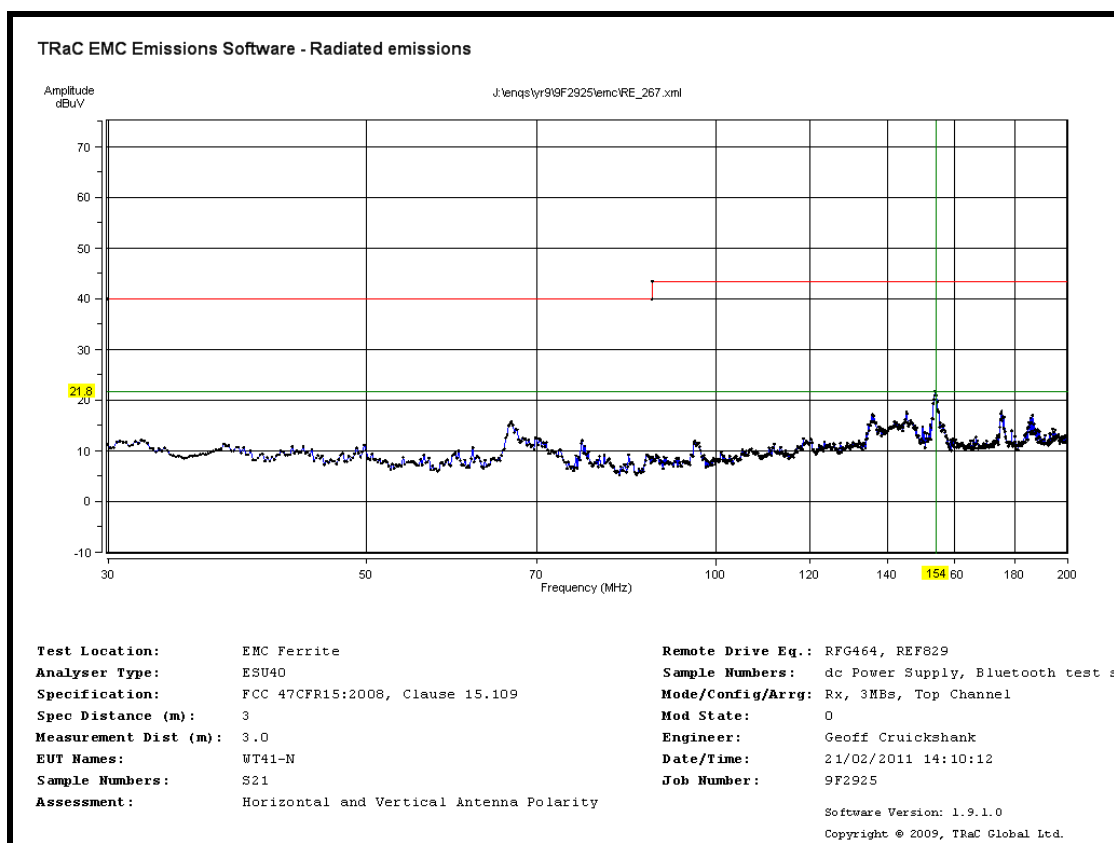
Radiated Bandedge Compliance – Average plot to average limit



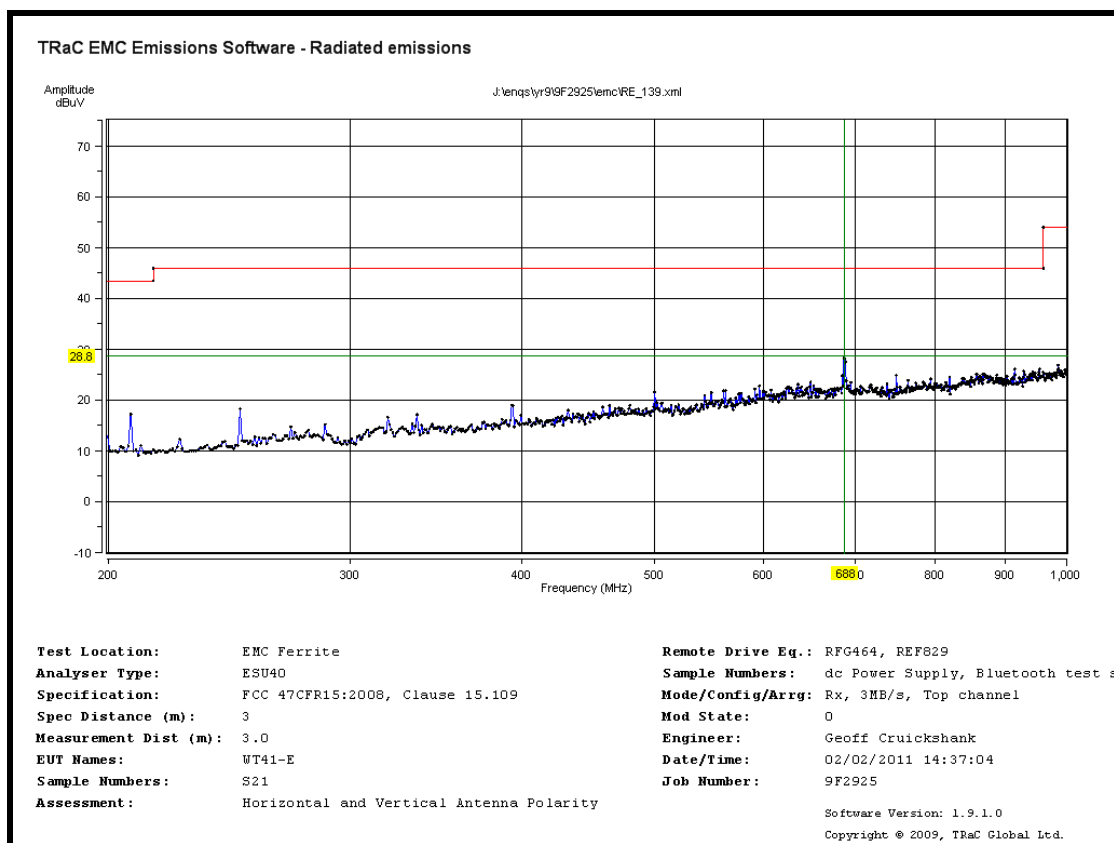
Lower Bandedge



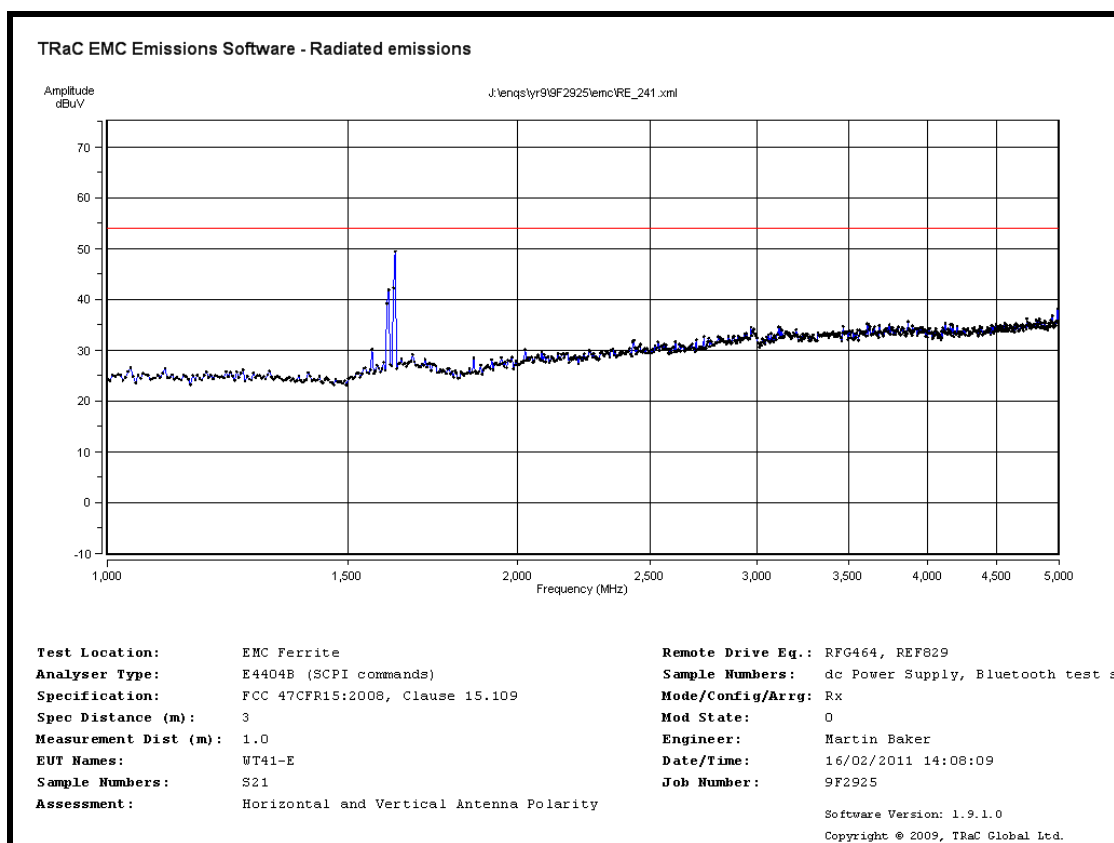
Upper Bandedge



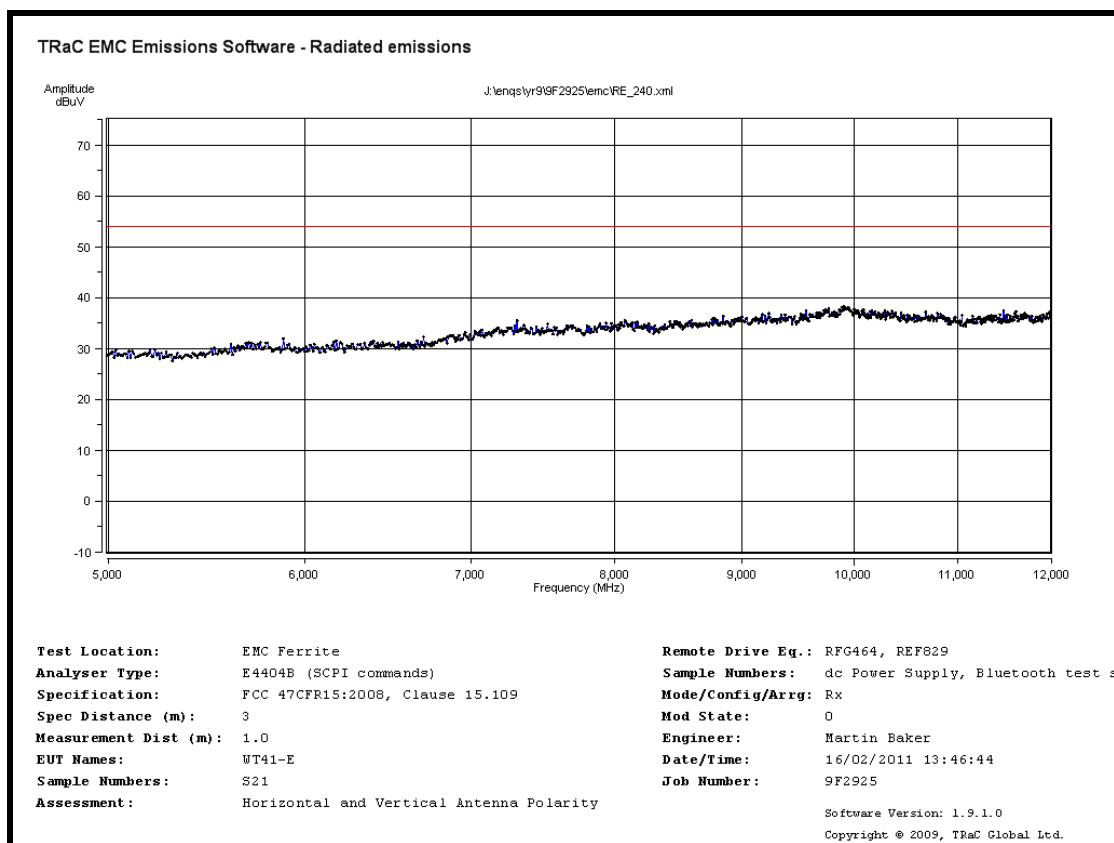
## Unintentional Radiated Spurious emissions 30 MHz to 200 MHz for S21



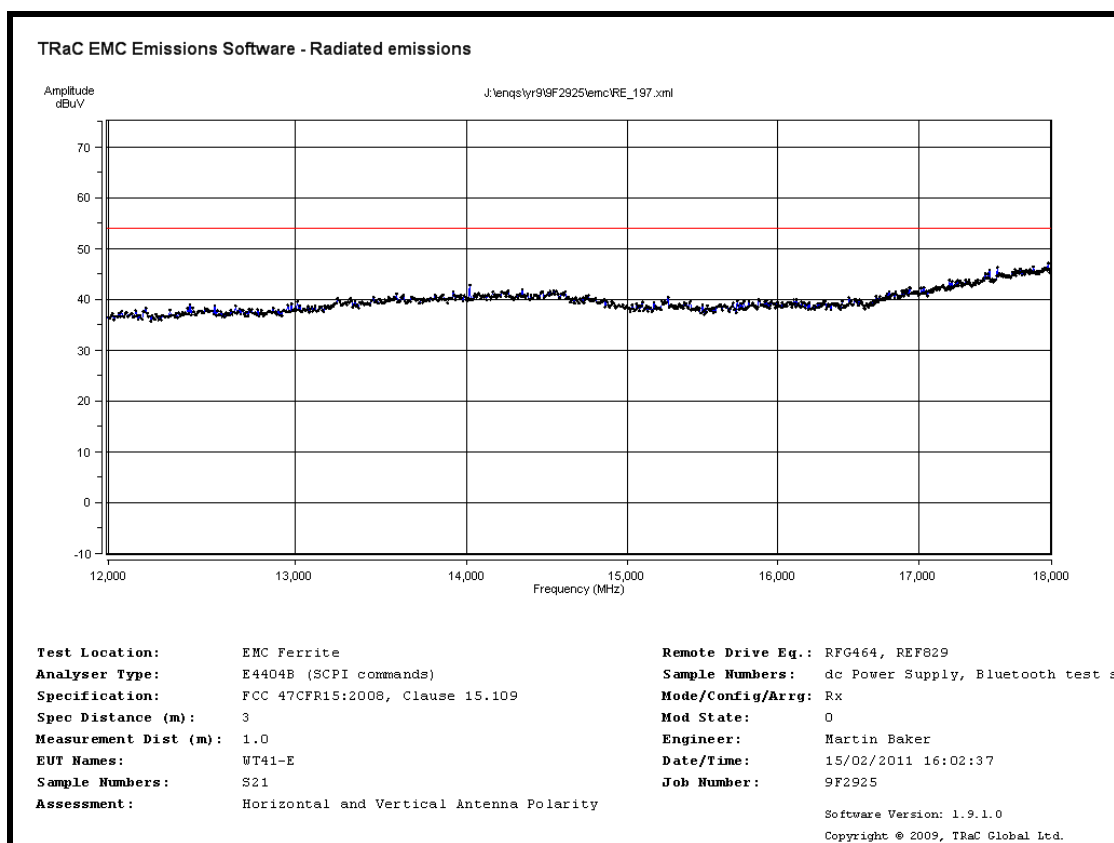
## Unintentional Radiated Spurious emissions 200 MHz to 1 GHz for S21



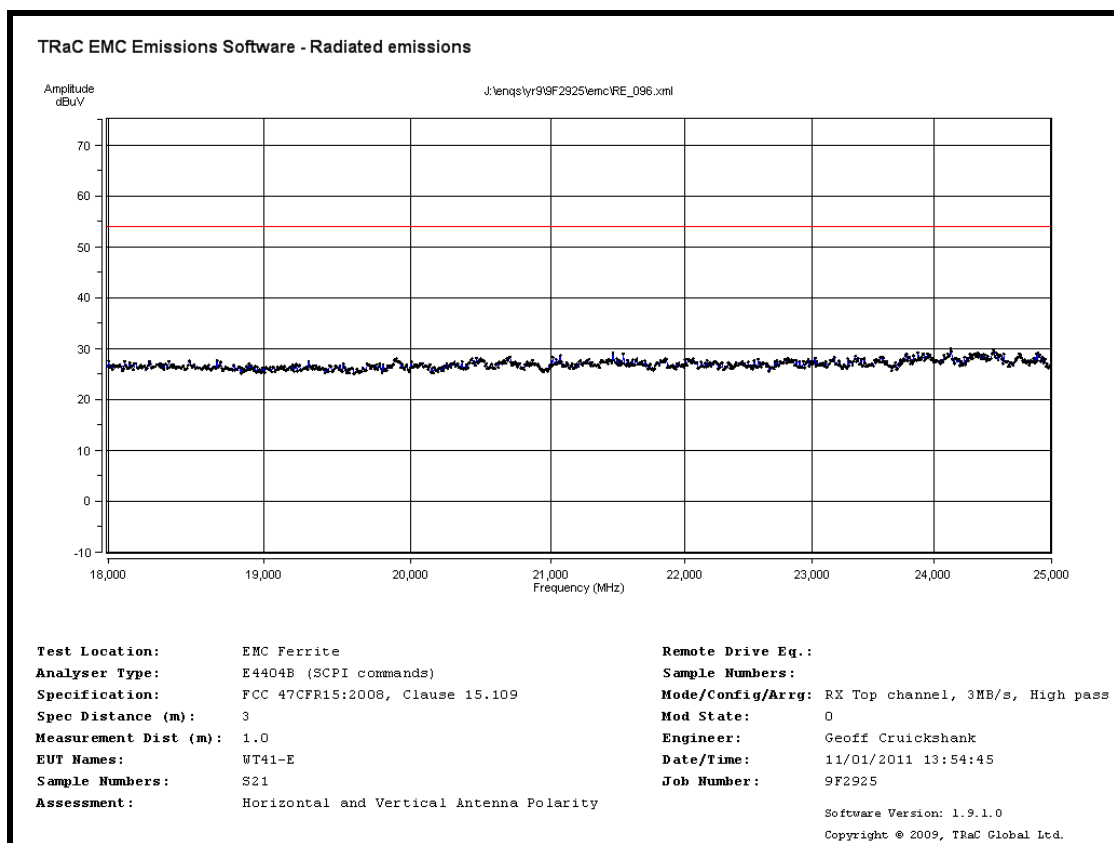
Unintentional Radiated Spurious emissions 1 GHz to 5 GHz for S21



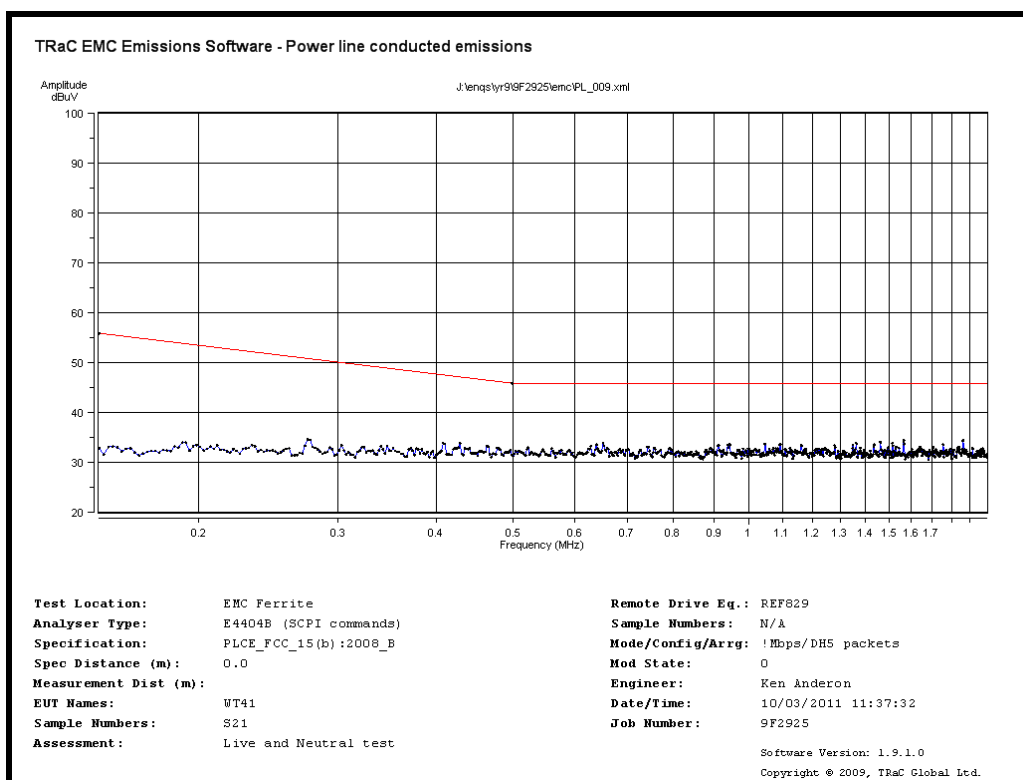
Unintentional Radiated Spurious emissions 5 GHz to 12 GHz for S21



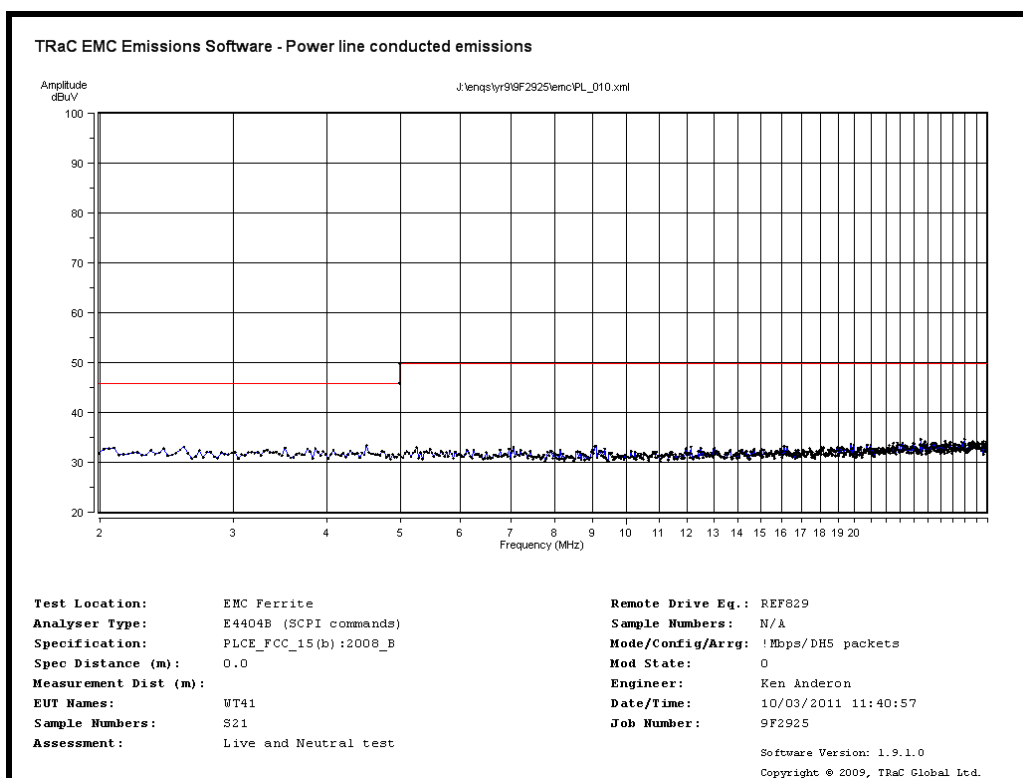
## Unintentional Radiated Spurious emissions 12 GHz to 18GHz for S21



## Unintentional Radiated Spurious emissions 18 GHz to 25 GHz for S21

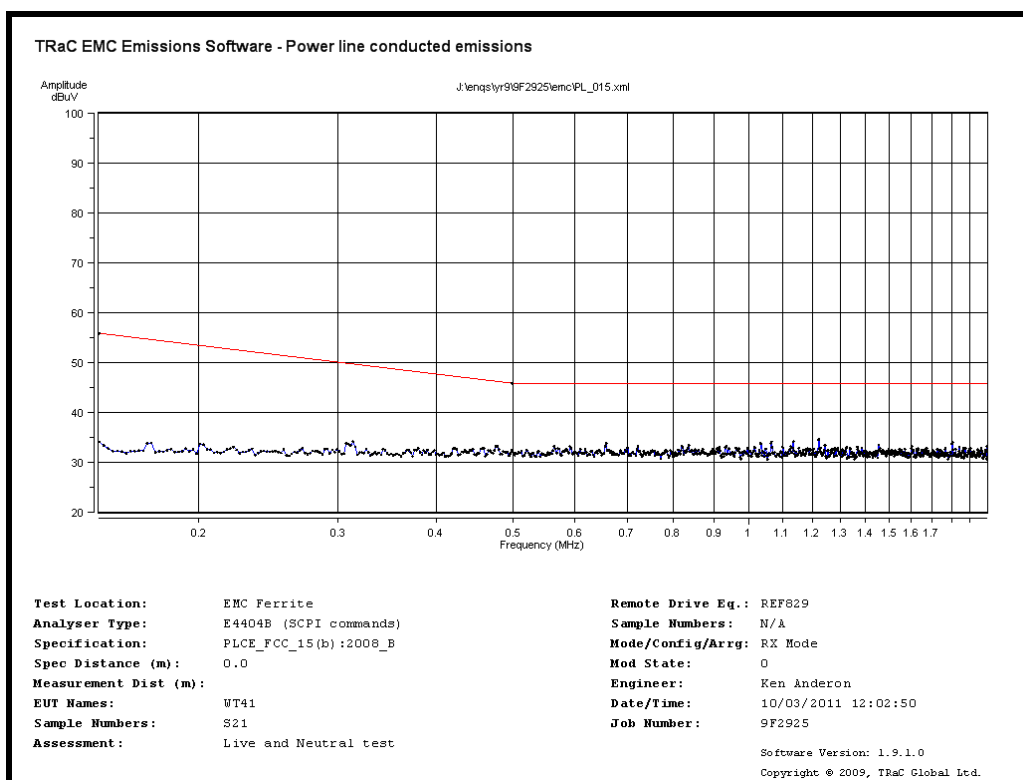


Power line conducted emissions Transmit Mode 0.15 MHz to 2 MHz

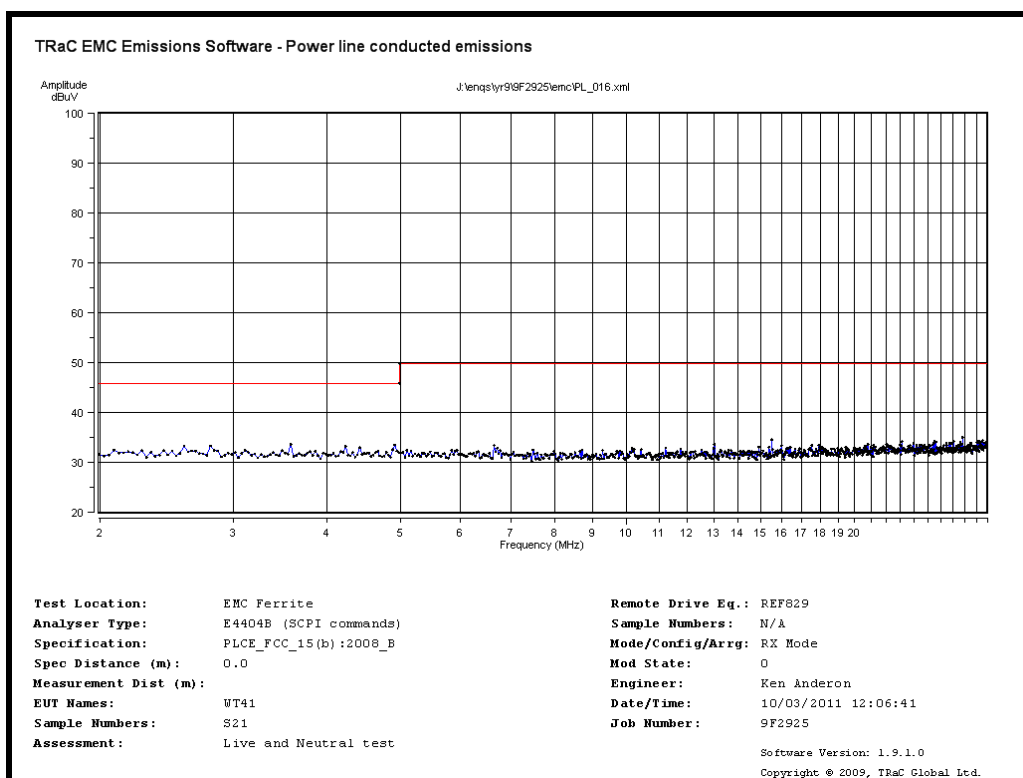


Power line conducted emissions Transmit Mode 2 MHz to 30 MHz





Power line conducted emissions Receive Mode 0.15 MHz to 2 MHz



Power line conducted emissions Receive Mode 2 MHz to 30 MHz